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INTERNATIONAL FOUNDATION FOR SCIENCE

IFS WORK 1974-1983

NATURAL PRODUCTS

The International Foundation for Science, a non-governmental, non-profit organization, is established to promote and support in developing regions of the world meritorious research in the fields of the natural and social sciences and in technology.

The Foundation will provide young scientists and technologists of outstanding merit from developing countries with financial and other support in their work.

A condition is that the research activity shall take place in the territory of a developing country.

INTERNATIONAL
FOUNDATION
FOR SCIENCE

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FOREWORD

By 1972, the year the International Foundation for Science was founded, scientists, academics, and policy makers interested in development aid had long recognized the difficult situation faced by young scientists from developing countries. Research opportunities did not exist in their countries, or if they did, they were reserved for senior and well-established researchers.

The need for an organization that could enable young scientists to pursue a career of research in their homelands was clear, and in 1972 Sweden and Canada provided the initial funds to establish such an organization, the IFS. Since then France, the Federal Republic of Germany, the Netherlands, Belgium, Norway, Switzerland, Nigeria, the United States, Australia and UNESCO have joined as donors of the Foundation. Member Organizations--scientific academies, research councils, and royal societies--from 55 countries advise the IFS on policy and promote its activities.

In the past ten years the IFS has awarded grants to nearly 800 scientists in 78 developing countries for research within a granting programme that includes Aquaculture, Animal Production, Food Crops, Afforestation and Mycorrhiza, Fermentation and Applied Microbiology, Natural Products, and Rural Technology. The grantees were selected based on the recommendations of the IFS Scientific Advisers, specialists in the IFS scientific areas who serve the IFS voluntarily and in a personal capacity.

The grants are modest (normally not more than USD 10 000) and can be awarded up to four times per grantee. Since the institute of the grantee provides a salary and facilities, IFS grants are devoted to purchasing the basic tools of research--equipment, expendable supplies, literature. Because grantees often face isolated and difficult conditions, because they are young and inexperienced, the IFS provides more than financial support.

Workshops are arranged on behalf of the grantees and are attended by IFS Scientific Advisers. These advisers provide guidance to grantees on such occasions, as well as by mail and visits to research sites.

The IFS was founded because there was no other organization providing this kind of support to developing countries. Today, ten years later, the IFS is still unique among organizations. This was the conclusion reached by a 1981-82 evaluation of the

FOREWORD

IFS commissioned by the IFS Sponsors and conducted by an external panel headed by Dr Francisco Sagasti of Peru and Prof Geoffrey Oldham of the United Kingdom. The panel also concluded that the IFS had succeeded in reaching the intended target group of young and well-educated scientists and had provided them with research opportunities in their own countries that would not otherwise have been available. The panel was satisfied with the selection of grantees and the quality and relevance of the research done by these scientists.

The panel made a number of recommendations for future activities. The proportion of grants given to scientists in Latin America and Africa should be increased in order to balance the geographic distribution between these continents and Asia. Because of the importance of the IFS Scientific Advisers to the success of the IFS activities, their number should be increased. The Foundation has implemented both of these recommendations.

The most important recommendation was that the IFS increase the scope of its activities. The need for such an increase is reflected by the number of applications received by the Foundation. Today the IFS is able to provide support for only one out of every three applicants. The IFS is making concerted efforts to seek additional funds that such a recommendation, and such a need, imply.

Gordon Butler
President

GUIDE TO IFS WORK
NATURAL PRODUCTS

This report is a chapter of the IFS WORK, which includes chapters of all the scientific areas of the IFS granting programme: A, Aquaculture; B, Animal Production; C, Food Crops; D, Afforestation and Mycorrhiza; E, Fermentation and Applied Microbiology; F, Natural Products; G, Rural Technology. These other chapters have also been printed individually and are available from the IFS Secretariat.

The chapter NATURAL PRODUCTS presents in numerical order the names and institutions of grantees who have received grants in this scientific area during the years 1974 - 1983. The title, a short summary, and subject descriptors (taken from the OECD MACROTHESAURUS; those not found in the OECD publication are preceded by asterisks ***) are included as well as the amount of funding provided by the IFS. These amounts are given in SEK, Swedish Crowns. The funding dates coincide with the year of the award. Completed projects are indicated by a date; when no such date appears, the project is active as of 1983.

A brief introduction of the scientific area was written by the IFS Scientific Secretary Dr Lennart Prage. There are two indexes: one by subject descriptor, the other by country.

The summaries of the projects were written at the IFS Secretariat and submitted to the grantees for their approval.

The information contained in the IFS WORK is part of a database created for sharing project information, the International Development Research Information System (IDRIS). The system, in the pilot project stage, is being hosted by the International Development Research Centre (IDRC) of Canada. The database is stored in the Centre's minicomputer, which uses MINISIS software. MINISIS processors were used to extract the information for the printing of the IFS WORK.

Ms Judith Furberg, Information Secretary, was responsible for the compilation and editing of the IFS WORK 1974 - 1983.

NATURAL PRODUCTS

A wide range of products are derived from nature; they are often unique to specific organisms, which can produce these products efficiently and in abundance. It is the scientist's job to locate those that are of value and to improve their quality.

In the context of the IFS granting programme, natural products are those that are obtained from natural sources but used for purposes other than food. Some form the basis for industries--essential oils, rubber, and glues. Others are used for their beneficial effects--medicines or pesticides. The first step in developing such products is the proper identification of their sources. The desired compounds are then prepared in a usable form at the same time that compounds with undesired effects are removed. These operations require skills and equipment for taxonomical and chemical work as well as facilities to test the effects of the preparations. In order to achieve optimal quality, improved methods to process and purify raw materials must be developed.

More than 60% of the 129 grantees supported within this research area are studying various aspects of medicinal plants. Although a few grantees have undertaken general surveys of traditionally used medicinal plants, most of them limit themselves to chemical and/or pharmacological studies on a few plant species with specified effects. The chemical research aims at the isolation and structural characterization of the active principle of a specific effect. If such studies are successful they result in a preparation of a chemically pure compound which can be shown to have the foreseen pharmacological effect. Studies usually involve chemists and pharmacologists as well as botanists to ensure the identification of the plant source.

Several grantees are working on plant compounds with anti-fertility activities; others are studying plants with anti-pyretic, anti-asthmatic, wound healing, analgesic and cardiotonic properties. A number of grantees are involved with research on plants used for treatment of parasitic diseases, which are particularly frequent in the tropics.

The majority of the grantees doing research on medicinal plants have a background in chemistry and are capable of quite sophisticated analysis on the isolated products. They utilize modern methods of chromatographic separations as well as such sophisticated analytical methods as nuclear mynetic resonance (NMR), electrophoresis, and a variety of spectrophotometric

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methods. Often they must collaborate with colleagues abroad, but in many cases they have been able to set up and run quite sophisticated instruments in their own laboratories. Although pharmacological work is crucial to monitor and support the work of the chemists, the difficulty and expense of testing these products on experimental animals has limited the number of IFS grantees conducting research in this area. In order to stimulate interest in such research, the IFS has arranged courses/workshops on pharmacological screening of medicinal plants for grantees with chemistry backgrounds.

Research on medicinal plants that aims at finding new drugs is extremely costly and individual researchers without access to well-equipped laboratories have little chance to succeed. A more realistic approach is to study and improve plant preparations already in popular use in order to optimize their beneficial effects and remove undesired effects. Such research is useful to millions of people who are already using relatively simple and cheap traditional medicines.

A small number of grantees have been working on plant products with pesticidal effects. Many plants have developed defence systems against pests and diseases. Because of chemically based communication systems between insects and plants, peromones and other behaviour-controlling substances may be used as alternatives for insecticides in the management of pests. A major advantage of plant products with pesticidal properties is that they are biodegradable and usually non-toxic.

About 20% of the grantees in the area of Natural Products are studying products with existing or potential use for industry. Many grantees focus on new sources of essential oils, spices and other flavouring substances. Studies on various polymers, such as gums and agar-like substances from algae have been supported as well as research on resins and latex-like products. Such studies have involved quite sophisticated approaches, e.g., research on enzymes in rubber biosynthesis performed in plant tissue cultures. Although most grantees are investigating materials derived from plants, there are some who have studied compounds of other origins. One grantee for example, is working with research on silk products, and another on snail toxins.

Although most aspects of research that relate to natural products are currently included in the IFS granting programme,

there is room for expansion. Research on natural products used in veterinary medicine is one and research on natural products used in the textile and leather industry is another. There are also plant products that can provide energy, lubricants, colouring agents, anti-oxidants, and detergents.

About 50% of the grantees are located in Asia, where biological and chemical studies on natural products have a long tradition. About 40% are located in Africa and the remaining 10% in Latin America.

The two IFS regional courses/workshops on pharmacological screening of medicinal plants took place in Panamá, Panamá, in November 1982 and in Dakar, Senegal, in March 1984. Both started with an excursion to collect raw materials from local plants, which were brought to laboratories for preparation of extracts. These crude preparations were screened for various pharmacological effects using laboratory animals. These courses/workshops resulted in Provisional Reports.

The IFS, together with UNESCO, sponsored workshops on natural product chemistry in Colombo, Sri Lanka, in Feburary 1977 and in Bangkok, Thailand, in September 1980.

NATURAL PRODUCTS

Grantee F013: Prof Iradj Lalezari, College of Pharmacy, University of Tehran, TEHRAN, Iran

"Alkaloids from Glaucium spp."

IFS funding: 44100 SEK 1974 22000 SEK 1976
Completed 1981

Prof Lalezari will study wild-growing Glaucium spp. in Iran and extract, isolate, identify and determine the alkaloids in the plant. The project will be followed up by pharmacological studies on the separated alkaloids. It is expected that substitutes for codeine and other opium alkaloids may be found, which might decrease the need for production of opium as a source of an anti-tussive agent.

/medicinal plants/ /chemical analysis/ /pharmacology/ /drugs/

Grantee F014: Dr Vichai Reutrakul, Department of Chemistry, Faculty of Science, Mahidol University, Rama VI Road, BANGKOK 4, Thailand

"Chemical and biological studies of naturally occurring compounds from plants of the Zingiberaceae family"

IFS funding: 36000 SEK 1974 44000 SEK 1975
44000 SEK 1979 Completed 1983

Diospyrol and hydroxystilbene, locally well-known drugs for treatment of hookworms, will be studied. Diospyrol is extracted from plant fruits which are available only seasonally and the extract is susceptible to air oxidation. If an effective anti-helminth agent can be obtained at a resonable cost, it will contribute tremendously to the well-being of the Thai people, as infections from intestinal worms are widespread.

/medicinal plants/ /fruits/ /chemistry/ /drugs/ /disease control/ /parasitic diseases/

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NATURAL PRODUCTS

Grantee F015: Dr Serene Vimokesant, Department of Biochemistry, Faculty of Science, Mahidol University, Rama VI Road, BANGKOK 4, Thailand

"Thiamin deficiency caused by tea and tannin, and its prevention"

IFS funding: 16650 SEK 1974 33000 SEK 1975
34830 SEK 1979

Dr Serene Vimokesant will study the significance of anti-thiamin factors in tea, which cause thiamin deficiency in humans, and determine the reaction between thiamin and tannic acid, as well as the biological value of the reaction products. The project aims at finding practical ways of improving the thiamin status of the people in Northern Thailand, who chew fermented tea leaves as a stimulant.

/vitamin deficiency/ /tea/

Grantee F016: Dr Anura Jayewardene, Ceylon Institute of Scientific and Industrial Research, (CISIR), P O Box 787, COLOMBO 7, Sri Lanka

"Studies on cinnamon"

IFS funding: 38250 SEK 1974 22000 SEK 1975
24000 SEK 1977 Completed 1979

Two varieties of cinnamon with different chemical properties are grown in Sri Lanka to produce the spice and the oil. Market standards require that cinnamon oil contain a minimum of 75% eugenole. Oil extracted from one of the varieties contains a mixture of eugenole and safrole, and therefore it cannot be used for oil production. Since the two varieties are morphologically similar, the only way to identify them is by the difference in odour of the crushed leaf. Dr Jayewardene will study by chemical methods the difference of cinnamon oils due to geographical location and soil conditions, and elucidate the chemical properties of the different endemic varieties of cinnamon.

/spices/ /edible oils/ /chemical analysis/

NATURAL PRODUCTS

Grantee F017: Dr Atoutou Djakoure, Laboratoire de Chimie Organique Biologique, Faculté des Sciences, Université d'Abidjan, 04 BP 322, ABIDJAN 04, Ivory Coast

"Chemical and structural studies of medicinal plants in Ivory Coast"

IFS funding: 15750 SEK 1974 22000 SEK 1975

The alkaloids of Adenia spp. and Vernonia spp. will be extracted, and separated for further studies. The work is undertaken in close cooperation with a group studying the pharmacological effects of the extracts.

/medicinal plants/ /chemical analysis/ /pharmacology/

Grantee F040: Dr Ally Kombe, Central Pathology Laboratory, University of Dar es Salaam, P O Box 35091, DAR ES SALAAM, United Republic of Tanzania

"Pulmonary hypertension induced by ingestion of Crotalaria spp. seeds in rats"

IFS funding: 4700 SEK 1974 Completed 1979

Pulmonary hypertension may be caused by Crotalaria spp., which are used by the local population as medicine or food. There exist 120 Crotalaria spp. in Tanzania, and it is suspected that many people suffer severely from eating some of these noxious plants.

/traditional medicine/ /medicinal plants/ /toxic substances/

NATURAL PRODUCTS

Grantee F041: Mr Posanyi Madati, Government Chemical Laboratory, P O Box 164, DAR ES SALAAM, United Republic of Tanzania

"Anti-tumour activity of selected Tanzanian plants"

IFS funding: 20300 SEK 1974 24000 SEK 1977
Completed 1979

A number of plants from Tanzanian flora will be phytochemically screened in order to find active compounds that may be utilized medically, agriculturally, industrially and commercially. Some of the species to be studied are previously known to contain active substances useful as antibiotics, anti-carcinogenes or insecticides, or with hypotensive properties.

/plants/ /chemical analysis/ /natural products/ /insecticides/ /antibiotics/

Grantee F042: Dr Goverdhan Mehta, School of Chemistry, University of Hyderabad, "Golden Threshold", Nampally Station Road, HYDERABAD 500 001, India

"Molecular design in terpenoids"

IFS funding: 8400 SEK 1974

The aim of the project is to modify and use naturally occurring terpenoids for transformation into products with biological, insecticidal or pheromonal activity, or useful as insect and plant hormones.

/natural products/ /chemistry/ /insecticides/

NATURAL PRODUCTS

Grantee F061: Dr Fawzia El-Bay, National Research Centre, El-Tahrir St, Dokki, CAIRO, Egypt

"Investigation of selected wild Egyptian plants for coumarin constituents"

IFS funding: 19750 SEK 1975 24000 SEK 1977

Dr El-Bay will study wild Egyptian plants belonging to the families Moraceae, Umbelliferae, Compositae and Leguminosae to evaluate their use as coumarin sources. The most promising sources may be valuable for the drug industry in Egypt. The aim is to find increased sources of xanthotoxin to be used in the drug industry for skin diseases like vitiligo and possibly psoriasis.

/medicinal plants/ /drugs/ /disease control/ /skin/

Grantee F062: Dr Adel Boulos, National Research Centre, El-Tahrir St, Dokki, CAIRO, Egypt

"Establishment of an economic process for the production of solasodine and progesterone under Egyptian conditions"

IFS funding: 23700 SEK 1975 24000 SEK 1978

Previous studies at the National Research Centre have shown that Solanum laciniatum may be a promising plant for solasodine production in Egypt. There is a worldwide shortage of solasodine, and much effort is being made to increase the production. Part of the research will involve studies on a commercial process for the side-chain degradation of solasodine, and further transformation of the obtained pregnadienonol into progesterone.

/medicinal plants/ /chemistry/ /hormones/

NATURAL PRODUCTS

Grantee F063: Dr Sirag Ali Ibrahim, Department of Botany, Faculty of Science, University of Khartoum, P O Box 321, KHARTOUM, Sudan

"The purification and properties of asparaginases and glutaminases from Sudanese plants and animals"

IFS funding: 10665 SEK 1975 Completed 1981

It is known that some enzymes, e.g., asparaginases, can lead to remission of human cancer. Dr Ibrahim will examine parts of the Sudanese fauna to search for enzymes with anti-tumour properties.

/medicinal plants/ /disease control/ /cancer/

Grantee F064: Dr V Satyanarayana Rao, Department of Pharmacology, College of Veterinary Science, Andhra Pradesh Agricultural University, TIRUPATI 517 502, India

"Pharmacological investigations of a few selected indigenous drugs"

IFS funding: 15800 SEK 1975 11000 SEK 1980

Pharmacological properties of extracts from the following plants, traditionally used as drugs in India, will be studied: Leaves and seeds of Aristolochia sp. - effective for roundworm infection; seeds of Butea frondosa - effective for roundworm infection; seeds of Carica papaya - effective for roundworm infection; leaves from Cassia alata - prescribed for giddiness due to heart disease, coffee substitute; plant of Adhatoda vasica - treatment of herpes, eczema and ringworm infection; leaves and seeds from Cassia auriculata - active for tubercular bacilli. Effects on respiration, blood pressure and electro-cardiogram will be tested, as well as effects on isolated tissues of experimental animals. Toxicity tests will be carried out. It is hoped that low-cost, safe drugs may be found to replace the costly allopathic drugs presently used in human and veterinary medicine.

/medicinal plants/ /pharmacology/ /drugs/ /disease control/ /parasitic diseases/

NATURAL PRODUCTS

Grantee F065: Dr Abdulraman Msangi, Institute of Marine Sciences, University of Dar es Salaam, P O Box 668, ZANZIBAR, United Republic of Tanzania

"Studies on malaria and schistomsomias in ujamaa villages"

IFS funding: 35550 SEK 1975 18000 SEK 1977
Completed 1980

The establishment of ujamaa villages aims at achieving a more balanced economic and social development in Tanzania. Depending on their location, some of the villages are based on agriculture, some on animal husbandry, some on fishing. It is quite probable that different disease patterns are related to the movement of people from highland to lowland, or to the type of activities in the villages, e.g., the use of irrigation. Ujamaa villages in different parts of Tanzania will be surveyed, and the extent and consequences of malaria and schistosomiasis.

/disease control/ /malaria/ /schistosomiasis/

Grantee F066: Dr Mahmoud Zahran, Botany Department, Faculty of Science, Mansoura University, MANSOURA, Egypt

"Transplantation of Juncus rigidus in the saline and non-productive lands of Egypt"

IFS funding: 23700 SEK 1975 26400 SEK 1976
24000 SEK 1977

Juncus rigidus is a highly salt tolerant rush. It can accumulate the excess salt it absorbs from the soil in the upper parts of its green culms. Plantation of J. rigidus may be one way of reclaiming non-productive saline soils. The plant contains long fibres, potentially important as a supplementary raw material in Egyptian pulp industry, to improve paper quality. The seeds of the plants are also used in medicine.

/plant fibres/ /paper/

*** /saline soils/

NATURAL PRODUCTS

Grantee F080: Dr C Otonuya Oputa, Department of Agronomy, University of Ibadan, IBADAN, Nigeria

"Some sweet berries of the tropics as a sugar substitute"

IFS funding: 23760 SEK 1975

Nigerian berries have been found to contain special sweetening agents. Dr Oputa will study three of these berries: Dioscorephyllum cumminsii, Synsepalum dulficium and Thaumatococcus daniellii. He will study the best method of cultivating these plants for a high yield of fruit sweeteners. Extraction, isolation and characterization of the sweet factors of the berries will also be attempted.

/plants/ /chemical analysis/ /food additives/

Grantee F081: Dr Saifuddin Dossaji, Department of Botany, University of Nairobi, P O Box 30197, NAIROBI, Kenya

"A chemical and pharmacological study of four indigenous medicinal and poisonous plants in Kenya"

IFS funding: 30800 SEK 1975 12320 SEK 1977
22000 SEK 1979

Alkaloid and terpenoid contents of the following four indigenous plants will be analysed: (1.) Sarcostema viminale. The Masai chew the stem as a thirst quencher. One or two kg of fresh or dried plant has been proved sufficient to kill a sheep in a day or two; (2.) Salvadora persica. The Masai use a paste of the powdered root like a mustard plaster and drink a decoction of the root as a remedy for gonorrhoea and vesical catarrh; (3.) Fuerstia africana. The Chagga use it as a vermicide, as a purgative and malaria remedy; (4.) Lantana rugosa. The Jaluo masticate the leaf and use the saliva as an eye medicine. It is apparently powerfully astringent and is used indiscriminately for opthalmia and conjunctivitis in man and beast. Toxic effects are photosensitization and gastro-intestinal disturbance. The study will increase the understanding of traditional herbal medicines in Kenya and the risks following the use and abuse of the above medicinal plants.

/traditional medicine/ /medicinal plants/ /chemical analysis/

NATURAL PRODUCTS

Grantee F082: Dr Berhanu Abegaz Molla, Department of Chemistry, Addis Ababa University, P O Box 1176, ADDIS ABABA, Ethiopia

"Search for the active constituents of Glynus lotoides "

IFS funding: 27720 SEK 1975 17600 SEK 1977
15770 SEK 1980

The seeds of mettere (Glynus lotoides) are used by local people for a widely prevalent tapeworm infection. The active principle from the plant has already been isolated in crude form and a convenient in vitro bioassay system has been developed.
Dr Berhanu Abegaz Molla now intends to resolve the crude compound into its components, identify the active compounds by bioassay, and elucidate their structures. Once the structure, activity and properties of the active compounds are known, the toxicological effects will be compared with those of the commonly used kosso drug (Hagenia abyssinica) which has harmful side effects caused by the activity of taeniacides.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/ /disease control/ /parasitic diseases/

Grantee F083: Dr Abdul Habib Dil, Department of Pharmacology, Faculty of Medicine, Kabul University, KABUL, Afghanistan

"Mechanism of hypolipidemic action of dill (Anethum graveolens)"

IFS funding: 26400 SEK 1975 22000 SEK 1977
Completed 1980

Anethum graveolens (Umbelliferaceae spp.), which grows wild and is also cultivated in Afghanistan, is used traditionally in the treatment of hyperlipemia and obesity. Dr Dil will investigate the possible hypolipedemic action of the plant by pharmacological screening on experimental animals and patients. The research may lead to medicinal uses of the plant for treatment of artherosclerosis and coronary heart diseases.

/traditional medicine/ /medicinal plants/ /pharmacology/ /disease control/

NATURAL PRODUCTS

Grantee F084: Prof Fernando Hurtado P, Departamento de Tecnología de Alimentos y Productos Agropecuarios, Universidad Nacional Agraria, Apartado 456, La Molina, LIMA, Peru

"Muña (Minthostachis mollis) oil extractive as a potato preserver"

IFS funding: 26400 SEK 1975

The plant Minthostachis mollis is found in Andean valleys of Peru and Bolivia, at altitudes between 2 700 and 3 700 m. The Incas used it for preserving potatoes. Prof Hurtado P will measure the extraction of oils from Muña, study the yield and distribution of oil in each part of the plant, and check the effects of obtained extracts by simple tests. The aim is to use these extracts of etheric oils more extensively for preserving potatoes.

/food preservation/ /potatoes/

Grantee F085: Mr Juan Herrera R, Departamento de Tecnología de Alimentos y Productos Agropecuarios, Universidad Nacional Agraria, Apartado 456, La Molina, LIMA, Peru.

"Industrial utilization of tara (Caesalpinea tintorea)"

IFS funding: 26400 SEK 1975 Completed 1979

Tara grows wild as a tree in highlands at altitudes between 2 000 and 3 000 m, where cultivation of other economically important plants is difficult. Tannins, proteins and lipids will be extracted from the fruit and the bark of the tree with industrial applications in view. Local production of tannic acid would reduce the need for importation.

/trees/ /natural products/ /tanning industry/

NATURAL PRODUCTS

Grantee F086: Mr L A K Nelson, Department of Chemistry, University of Science and Technology, KUMASI, Ghana

"Isolation and characterization of molluscoids in the fruit and bark of Balanites aegyptiaca"

IFS funding: 17600 SEK 1975 Completed 1978

The fruit and bark of Balanites aegyptiaca kill small freshwater snails (which act as intermediary hosts for schistosomiasis) and also parasites (B. roxburghii) and water fleas (Cyclops). Mr Nelson will attempt to isolate the lethal principles and identify their chemical nature. The aim is to develop an effective, biodegradable pesticide for water-borne diseases without harmful effects for humans, vegetation or wildlife.

/medicinal plants/ /chemical analysis/ /disease control/ /schistosomiasis/ /pesticides/

Grantee F101: Dr Kosan Kusamran, Department of Chemistry, Faculty of Science, Mahidol University, Rama VI Road, BANGKOK 4, Thailand

"Studies on the chemical constituents of Zingiber cassumunar"

IFS funding: 13200 SEK 1975 47000 SEK 1978

Recent research work has revealed that the crude extract from Zingiber cassumunar has a strong anti-spasmodic action, which indicates that it might be used to alleviate asthma problems. Dr Kosan Kusamran will extract, isolate and identify the active components. The elucidation of structure will be carried out by using both spectroscopic and chemical means. The isolated compounds will be tested with the cooperation of a group working exclusively with pharmacological effects of the extracts.

/medicinal plants/ /chemical analysis/ /pharmacology/

NATURAL PRODUCTS

Grantee F103: Prof Keto Mshigeni, Directorate of Postgraduate Studies, University of Dar es Salaam, P O Box 35091, DAR ES SALAAM, United Republic of Tanzania

"Research on potential sources of the industrial phycocolloids agar, carrageenan and algin in Tanzania"

IFS funding: 11880 SEK 1976 27120 SEK 1977
45000 SEK 1982

Prof Mshigeni will initiate studies to estimate the contents of colloid substance in selected Tanzanian algae to find out how much gel can be obtained from them and which species are suitable for commercial phycocolloid extraction. Ecological studies will be undertaken to determine changes in yield and quality due to seasonal variations, as well as a study of the occurrence of phycocolloid-producing species. Prof Mshigeni will also collect environmental and biological data which will serve as a basis for possible algae farming in Tanzania's coastal villages.

/algae/ /polymers/

Grantee F139: Dr Atta-Ur Rahman, H E J Research Institute of Chemistry, University of Karachi, KARACHI-32, Pakistan

"Synthesis of reserpine analogues and indoloquinolizidines from harmaline and harmine"

IFS funding: 39600 SEK 1976 36000 SEK 1977
41800 SEK 1979 43120 SEK 1980

Harmaline and harmine are major indole alkaloids occurring in the seeds of Peganum harmala. They are cheap and widely available in Pakistan, but up to now little utilization has been made of their alkaloid content. Dr Rahman has previously demonstrated that imine-enamine tautomerism in harmaline can be utilized for the syntheses of a variety of methoxyindoloquinolizidines by simple synthetic procedures. He intends to continue with the reactions of harmaline and harmine with suitable functionalized cyclohexane derivatives which should lead to a host of reserpine analogues of great pharmacological interest.

/medicinal plants/ /chemical analysis/

NATURAL PRODUCTS

Grantee F140: Mr Oscar Dokosi, Department of Botany, University of Ghana, P O Box 54, LEGON, Ghana

"Ethnobotanic investigation of plants used by the Ghanaian traditional healers in curing diseases"

IFS funding: 15400 SEK 1976

Mr Dokosi has already made a survey of many parts of Ghana to obtain information on the medical use of Ghanaian plants. With this complementary study, Mr Dokosi hopes to obtain further information as to the identification of plants and their medicinal value as well as descriptions of important drug recipes traditionally used. The project also includes a comparative study of plants used in a few other West African countries.

/traditional medicine/ /medicinal plants/

*** /taxonomy/

Grantee F141: Dr Samran Bhu-Anantanondh, Department of Chemistry, Khon Kaen University, KHON KAEN, Thailand

"Investigation, extraction, isolation and structure elucidation of some compounds in roots of Polyalthia suberosa"

IFS funding: 22880 SEK 1976

The roots of Polyalthisa suberosa have the reputation in Thailand of having medicinal value for curing indigestion and for increasig milk secretion for women with inadequate lactation while breast feeding. Dr Samran Bhu-Anantanondh will extract, separate and make a structure elucidation of compounds occurring in roots of P. suberosa. He will then, in cooperation with a group of pharmacologists, investigate whether or not the compounds found have any pharmacological value, in particular as a remedy for low milk secretion. If these experiments are successful, the grantee will attempt to synthesize such compounds so that they may be produced at a low cost.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/

NATURAL PRODUCTS

Grantee F142: Ms Natividad Eufemio, Chemistry Department, Araneta University, Post Office, RIZAL 3104, Philippines

The grantee is deceased.

"Survey of Philippine plants for contents of oleanolic acid and related triterpenes"

IFS funding: 22000 SEK 1976 Completed 1979

Previous surveys show that many plant species in the Philippines contain oleanolic acid. It has been suggested that schistosomiasis could be controlled by oleanolic acid, and for this purpose Ms Eufemio will attempt to extract this acid from plants and to isolate it. This isolated oleanolic acid will then be clinically tested to verify whether or not they are effective against schistosomiasis infections.

/medicinal plants/ /disease control/ /schistosomiasis/

Grantee F143: Prof Willy Anokbonggo, Department of Pharmacology and Therapeutics, P O Box 7072, Makerere, Uganda

"Pharmacological investigations into potential therapeutic application and toxicology of traditionally used Zambian medicinal plants"

IFS funding: 22000 SEK 1976

There are certain plants which are traditionally used for medical purposes throughout Uganda. Prof Anokbonggo intends to collect data about these plants and to carry out a thorough scientific analysis of the various traditional remedies to find out their possible medical value. When the structures of the drugs have been elucidated, it may be possible to form a basis for synthetic preparation of certain compounds. Prof Anokbonggo will work on Sida urens, the leaves of which are used to treat asthma, on two plants used as conceptives, as well as on plants used against cardio-vascular diseases. Elucidation of chemical structures and determination of psychoactive effects of certain plants will also be carried out.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /drugs/

NATURAL PRODUCTS

Grantee F144: Dr Beatrice Guevara, Research Center, University of Santo Tomas, Espana St, MANILA, Philippines

"Phytochemical and biological studies of Philippine herbal drugs for skin ailments"

IFS funding: 22000 SEK 1976 44000 SEK 1979
44000 SEK 1980 Completed 1982

The oil extract of the seeds of Ipomoea muricata has been used by the Dominican missionaries for skin ailments like chronic and gangrenous wounds, cuts and blisters due to burns. The plant will be assayed for anti-microbial properties and the biologically active constituents from I. muricata will be isolated and purified and the chemical structure identified.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /disease control/ /skin/

Grantee F145: Dr Hoda Baghdadi, National Research Centre, El-Tahrir St, Dokki, CAIRO, Egypt

"Isolation of alkaloids from wild Egyptian plants reputed for their folk medicinal properties (Echinops spinosissimus, Convolvulus lanatus)"

IFS funding: 22000 SEK 1976 15750 SEK 1978
Completed 1980

Dr Baghdadi will work on two Egyptian plants reputed for their medicinal value--Echinops spinosissimus, used as a diuretic, nerve tonic and for the treatment of coughing; and Convolvulus lanatus, used as a purgative and contraceptive drug. These plants will be thoroughly screened for the presence of alkaloids and other possible chemical groups. The alkaloids will be isolated and identified; after structure elucidation, their possible pharmacological value will be investigated.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/ /contraceptives/

NATURAL PRODUCTS

Grantee F146: Dr Dominic Okorie, Department of Chemistry, University of Ibadan, IBADAN, Nigeria

"Examination of the medicinal plants Uvaria chamae, Polyathia suaveolens, and Schumanniophyton magnificum"

IFS funding: 26400 SEK 1976 34400 SEK 1979
25000 SEK 1981

Uvaria chamae, Polyathia suaveolens, and Schumanniophyton magnificum are used traditionally in Nigeria to treat snake bites, pains and coughing respectively. Dr Okorie will prepare crude extracts from different parts of these plants and have them biologically tested. Pure components will then be isolated by chromatographic separation. The structures of these pure compounds will then be elucidated and tested for their possible pharmacological activity.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/

Grantee F147: Dr Philippe Rasoanaivo, Laboratoire de Chimie Organique Structurale, Centre National de Recherches Pharmaceutiques (CNRP), B P 702, ANTANANARIVO, Madagascar

"Investigation of hypotensive and cicatrizant substances in Malagasy plants"

IFS funding: 26400 SEK 1976 33600 SEK 1977
26400 SEK 1979 Completed 1982

Dr Rasoanaivo will isolate active compounds from certain plants in Madagascar reputed for their medicinal value. Efforts will be made to determine the chemical structure of pure compounds obtained from crude extracts. The toxicity of the isolated compounds will be investigated in collaboration with the animal physiology laboratory of the University, and evaluation of the pharmacological activity will be undertaken.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/

NATURAL PRODUCTS

Grantee F148: Dr Mwindaace Siamwiza, School of Natural Sciences, University of Zambia, P O Box 32379, LUSAKA, Zambia

"Isolation and identification of active compounds in Zambian plants with reputed medicinal properties"

IFS funding: 22000 SEK 1976 21150 SEK 1978

Four Zambian plants will be systematically studied: (1.) Phellinus rimosus, used to treat cardiac conditions; (2.) ntulula (botanical name not yet known), used as an abortifacient; (3.) a Rhyncosia sp., which has caused deaths when mistakenly used in the popular munkoyo drink; and (4.) a plant with antibiotic characteristics. Dr Siamwiza will isolate, purify, and characterize the chemical constituents of these plants, and finally test their pharmacological and toxicological properties as well as their physiological effects.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/

Grantee F149: Prof Banyan Dadson, Department of Chemistry, Faculty of Science, University of Cape Coast, CAPE COAST, Ghana

"Chemistry of native plant medicines"

IFS funding: 22000 SEK 1976 36000 SEK 1978

The Centre for Scientific Research into Plant Medicine at Mampong has undertaken a systematic collection and clinical testing of herbal preparations. Upon this basis, Prof Dadson intends to undertake chemical extraction, purification and identification of compounds from native medicinal plants in order to investigate the occurrence of useful active medicinal components, and to develop efficient, large-scale processes for their extraction and purification.

/medicinal plants/ /chemical analysis/

NATURAL PRODUCTS

Grantee F155: Dr Gloria Cajipe, Marine Sciences Center, University of the Philippines, (UP), Diliman, QUEZON CITY 3004, Philippines

"Chemistry of natural products from Philippine marine organisms"

IFS funding: 28275 SEK 1976 23500 SEK 1978
36740 SEK 1979

Dr Cajipe will investigate the possibility of obtaining compounds from holothurians (sea cucumbers), echinois (sea urchins), starfish, poriferans (sponges) and marine algae, which may be used as drugs or fertilizers. Biologically active compounds and growth promoting substances will be extracted from taxonomically identified samples. The crude extracts will be separated into acidic and neutral fractions which will be screened biologically by bacteriological methods. After purification, the character and structure of active compounds will be elucidated, as well as their concentration.

/aquatic fauna/ /algae/ /molluscs/ /chemical analysis/ /drugs/ /fertilizers/

Grantee F156: Prof Augustine Ong, Palm Oil Research Institute of Malaysia, 18th Floor, Angkasa Raya, Ampang Road, KUALA LUMPUR, Malaysia

"Chemical analysis and utilization of effluents from palm oil processing mills"

IFS funding: 10875 SEK 1976 Completed 1978

Previous analyses of palm oil mill effluents have only given a rough indication of their constituents. Dr Ong intends to make a detailed analysis including amino acids, carbohydrates and trace metals in addition to crude proteins and nitrate nitrogen which have in previous work attracted interest. The analysis will be both quantitative and qualitative. Based upon these data, possible areas of utilization as animal feed and fertilizers will be developed.

/oil palms/ /agricultural wastes/ /chemical analysis/ /feed production/ /fertilizers/

NATURAL PRODUCTS

Grantee F157: Prof Yaghoub Aynehchi, Department of Pharmacognosy, College of Pharmacy, University of Tehran, TEHRAN, Iran

"Survey and evaluation of anti-fertility plants used in Iran"

IFS funding: 19575 SEK 1976 29050 SEK 1980

The object of this project is to widen the knowledge of plants rich in alkaloids, saponins, terpenoids, flavonoids and compounds with anti-microbial and anti-tumour activity. Collected plants will be identified, and after bibliographical screening of each species, extraction with different solvents will be carried out to determine the presence of the various compounds. Crude extracts will be tested against different kinds of organisms to investigate the presence of anti-microbial compounds.

/medicinal plants/ /chemical analysis/

Grantee F158: Dr Bhimsen Nagasampagi, Division of Organic Chemistry, National Chemical Laboratory, POONA 411 008, India

"Chemistry and utilisation of plant products for the development of new insect control agents"

IFS funding: 26100 SEK 1976 7740 SEK 1979

Indian plant species belonging to the families Compositae, Amaranthaceae and Simoroubaceae will be tested for the presence of new insect control agents such as juvenile hormones, anti-juvenile hormones, molting hormones, pheromones, insect anti-feedants, insecticides, insect repellants, etc. Active principles will be isolated from the crude extracts of the promising plants. The structures of new compounds will be elucidated. The structure-activity relationships of these compounds will be studied and the synthesis of economically-feasible compounds will be undertaken with the objective of developing safe, economical and efficient insect control agents based on natural products.

/plants/ /chemical analysis/ /insecticides/ /pest control/ /biological control/

NATURAL PRODUCTS

Grantee F159: Dr Sudam Basa, Department of Forest and Marine Products, Regional Research Laboratory, BHUBANESWAR 751 013, India

"Isolation and structure elucidation of possible anti-tumour compounds from plant and marine sources"

IFS funding: 8700 SEK 1976 16650 SEK 1978

Dr Basa aims at isolating some new acridone alkaloids and some complex benzophenones from plants of Rutaceae and Guttiferae families. The obtained substances will be purified and their structures elucidated before testing for biological activity. These plants are also likely to contain some other chemicals, like coumarine, terpenoids, steroids, which will be purified and tested as well. The results of this project will be used for pharmacological studies.

/medicinal plants/ /chemical analysis/ /pharmacology/

Grantee F160: Dr Mak Kok Fee, Department of Chemistry, Universiti Malaya, Lembah Pantai, KUALA LUMPUR, Malaysia

"Chemical studies of some Malaysian plants with pharmacological activity: Antidesma ghaesembilla, Randia macrophylla, Quercus lamponga "

IFS funding: 13050 SEK 1976

Dr Mak will collect information about Malaysian plants that have traditionally been used for remedies or other domestic purposes. These plants will be collected and botanically identified, and by simple chemical tests they will then be classified into groups by types of compounds, e.g., alkaloids, essential oils, etc. Promising plants will be tested pharmacologically to ascertain whether they contain substances with intrinsic or potential therapeutic properties. Active compounds will be isolated and chemically studied to provide a basis for use of the plants.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/

*** /taxonomy/

NATURAL PRODUCTS

Grantee F161: Dr Jerome Msonthi, Chemistry Department, Chancellor College, University of Malawi, Box 280, ZOMBA, Malawi

"The isolation and investigation of organic compounds from local plants which have medicinal or pharmaceutical uses"

IFS funding: 9570 SEK 1976 8975 SEK 1980
23625 SEK 1982

Dr Msonthi aims at extracting and separating active compounds in leaves, roots, and flowers or bark of selected plants, e.g., Sesamum angolenses and Ceretotheca sesamoides. Active compounds will be isolated and identified prior to large-scale production for pharmaceutical purposes.

/medicinal plants/ /chemical analysis/ /drugs/

Grantee F162: Dr Daniel Dwuma-Badu, Department of Pharmaceutical Chemistry, Faculty of Pharmacy, University of Science and Technology, KUMASI, Ghana

"Phytochemical and biological studies of the constituents of three West African medicinal plants for analgesic, anti-malaria, and purgative principles"

IFS funding: 34800 SEK 1976 37600 SEK 1978
43000 SEK 1979 75000 SEK 1982

The plant Cyrtolepsis sanguinolenta has traditionally been used to treat malaria. Clinical tests have verified this activity. The plant Kolobopetalum auriculatum is used by herbalists as an analgesic, while Cassia prodocarpa is used as a purgative in Ghana. Material from the plants will be collected, dried and powdered. Crude extracts of the powder will be separated into different fractions by the use of various solvents, and the fractions will be column chromatographed to separate active ingredients. The structure of the pure chemical constituents will be determined by conventional methods. The constituents will then be tested for analgesic, anti-malarial and purgative properties.

/medicinal plants/ /chemical analysis/ /disease control/ /malaria/

*** /analgesics/

NATURAL PRODUCTS

Grantee F184: Ms Patricia Sierra B, Centro Nacional de Investigaciones Cientificas, (CNIC), Apartado 6990, HABANA, Cuba

"Study of the alkaloid content of some Tabernaemontana spp."

IFS funding: 26100 SEK 1976 Completed 1983

Some endemic species of Cuban plants will be studied for their medicinal and toxic properties as sources of products with pharmacological or insecticidal activity. Ms Sierra B expects to extract a series of indolic alkaloids from leaves, roots and fruits from Tabernaemontana spp. to be used for production of compounds with known pharmacological activity. The extracts will be chromatographically separated, and isolation and purification of individual alkaloids carried out by thin- and thick-layer and column chromatography. Spectroscopic structural studies will be undertaken by various techniques. The derivatives will then be tested for possible pharmacological activity.

/med cinal plants/ /chemical analysis/ /insecticides/ /pharmaceuticals/

Grantee F185: Mr Georges Rakotovao, Département de Recherches Forestières et Piscicoles, CENRADERU B P 504, Ambatobe, ANTANANARIVO, Madagascar

"Production of glue from Malagasy raw materials"

IFS funding: 30450 SEK 1976

Most of the glue used in Madagascar, especially in the important wood industries, is imported. Local sources are not at present exploited to any great extent. Mr Rakotovao will investigate the possibilities for local glue production by making a survey of promising raw materials, such as resin, rubber, latex, from acacia, Guttiferaceae, Euphorbiaceae and Sapotaceae spp. The material will be chemically analysed, and promising fractions will be extracted. Different types of glue for different purposes will be investigated, and the characteristics of the various types will be determined with regards to drying time, resistance to humidity and to biological degradation. The possibility of producing glue based on synthetic resin in connection with the manufacturing of creosote oil and other coal-tar products will also be investigated.

/plants/ /chemical analysis/ /resins/ /rubber/ /latex/ /natural products/

NATURAL PRODUCTS

Grantee F223: Dr Dina Bordoloi, Division of Medicinal and Economic Plants, Regional Research Laboratory, JORHAT 785006, Assam, India

"Survey, collection, extraction and screening of plants growing wild in the northeastern region of India for pesticidal properties"

IFS funding: 16720 SEK 1977 14850 SEK 1978
25800 SEK 1979 Completed 1981

Some plant species occurring wild in the northeastern region of the country have been found to have pesticidal properties. For instance, seeds of Solanum khasianum have been found to contain leech repellent and insecticidal principles. A Polypodium sp. is used for control of pests of poultry, and extracts from various tannin-bearing plants such as Cassia fistula, C. tora, Acacia catechu are found to have anti-fungal properties. Extracts and their fractions will be prepared from the mentioned plant species, and insecticidal, repellent and fungicidal properties tested. Identification of active principles will be initiated by using modern analytical techniques. Comparative field studies on pest control will be carried out, testing some of these plant extracts along with synthetic pesticides.

/wild plants/ /chemical analysis/ /pesticides/ /pest control/

Grantee F224: Prof Ghulam Abbas Miana, Department of Pharmacy, Gomal University, DERA ISMAIL KHAN, Pakistan

"Tumor inhibitor diterpenes from Daphne oleoides and Euphorbia spp."

IFS funding: 26400 SEK 1977 38700 SEK 1979

Some plants belonging to the family Thymeleaceae are very poisonous and derived compounds have shown significant tumor inhibitory activity in earlier experiments. New diterpenes related to daphnetoxin from Daphne oleoides and other Thymeleaceae spp. will be isolated and characterized, and the compounds will be tested for anti-cancer activity. Pure compounds will be further studied by chemical and spectroscopic techniques. Structural modification of isolated compounds may produce compounds of more enhanced and useful activity.

/medicinal plants/ /chemical analysis/ /disease control/ /cancer/

NATURAL PRODUCTS

Grantee F225: Dr Muhammad Malik, Nuclear Institute for Agriculture and Biology, P O Box 128, FAISALABAD, Pakistan

"Studies on natural repellents for protection of stored grains"

IFS funding: 15400 SEK 1977 75000 SEK 1983

Most food grain in Pakistan is stored quantities primitive storage conditions by farmers. Storage losses are estimated at 10-40%. In the proposed study, a biological evaluation of some indigenous plants will be made to determine their properties as insect repellents and feeding deterrents, especially for insect species which infest food grain. Active compounds will be isolated and their effects on insect pests will be studied, as well as the effect of the active compounds on various stages of development of the insects concerned. Semi-commercial trials will be carried out to study the efficiency of the repellent compounds.

/plants/ /insecticides/ /food storage/ /cereals/

Grantee F226: Dr Pichaet Wiriyachitra, Department of Chemistry, Faculty of Science, Prince of Songkla University, HAAD YAI, Thailand

"Screening and isolation of alkaloids from some Thai plants"

IFS funding: 30800 SEK 1977 32900 SEK 1978
43560 SEK 1979 35200 SEK 1980
50000 SEK 1981 Completed 1982

Plants from a few families will be tested for alkaloid contents, classified taxonomically, and their alkaloid contents recorded. Plants found to possess high alkaloid content will be extracted, the chemical constituents isolated, separated and purified. The structure of each constituent will be elucidated by chemical and spectroscopic means. If possible, elucidated structures will also be synthetically verified. Particular attention will be directed towards unexamined plants of the families Minispermaceae and Laurineae that are known to contain benzylisoquinoline-related alkaloids. The results of this survey will be used as reference for further phytochemical studies.

/traditional medicine/ /medicinal plants/ /chemical analysis/

*** /taxonomy/

NATURAL PRODUCTS

Grantee F227: Dr Cho Iwhan, Department of Chemical Science, Korea Advanced Institute of Science and Technology, P O Box 150, Chongryang, SEOUL, Republic of Korea.

"Sericin - separation and characterization"

IFS funding: 26400 SEK 1977

Sericin is a protein which occurs in interlayers of fibroins in silk cocoons. This protein, which is considered a waste product, is secreted by silkworms along with silk fibers in a weight ratio of 25-75%. Cocoon samples will be collected and Dr Cho will then, by means of water treatment, develop an extraction method for sericin. The effect of salt on extraction will also be studied. The crude extract will be purified by dialysis techniques and subject to thorough characterization. Molecular weight, dispersity and solubility in various aqueous solutions will be examined. Work will be carried out on modification of the protein for possible pharmaceutical applications, such as for a degradable blood extender and a hydrogel.

/silkworms/ /silk/ /chemistry/ /natural products/ /pharmaceuticals/

Grantee F228: Dr Abraham Vaisberg, Departamento de Microbiologia, Universidad Peruana Cayetano Heredia, Apartado 5045, LIMA, Peru

"Investigation of the cicatrizant properties of the plant extract Sangre de Grado for use as a therapeutic agent"

IFS funding: 35200 SEK 1977 26400 SEK 1979
58000 SEK 1982

Sangre de Grado is a plant extract prepared from Croton spp. and used in Peru as a cicatrizing agent in superficial wounds and for the treatment of gastric ulcers. It is proposed to study the effects and mechanism of action of Sangre de Grado and its derivatives on cell culture. Mechanisms that participate in the cicatrization process, such as cell proliferation, cell migration and adhesion properties, will be studied. Once the character of the mechanism is known, animal trials will be made before trying the pure compound on humans.

/traditional medicine/ /medicinal plants/ /pharmacology/

*** /cicatrizants/

NATURAL PRODUCTS

Grantee F229: Mr Pierre-Claver Rwangabo, Centre Universitaire de Recherche sur la Pharmacopé et la Médecine Traditionelle (CURPHAMETRA), B P 117, BUTARE, Rwanda

"Chemical and pharmacological screening of some traditional medicinal plants in Rwanda"

IFS funding: 26400 SEK 1977 26975 SEK 1980
Completed 1983

A thorough phytochemical and pharmacological screening of some plants used in traditional medicine in Rwanda will be carried out. It is expected that alkaloids and steroids will be the most important compounds. Active principles of the extracts will be isolated and purified. Structure elucidation will be carried out in collaboration with a Belgian laboratory. Promising compounds will ultimately be used for large-scale pharmacological purposes.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/

Grantee F230: Dr Ulric Trotz, University of Guyana, P O Box 841, GEORGETOWN, Guyana

"Chemical and phytochemical investigation of Strychnos spp. in Guyana"

IFS funding: 30800 SEK 1977 Completed 1979

The Strychnos spp. in Guyana includes at least twelve botanically identified sub-species. Only four of these have been chemically investigated and found to contain alkaloids. It is known that Strychnos spp. alkaloids are active as analgesics. Dr Trotz will carry out a broad phytochemical screening of Strychnos spp. in Guyana. Based on this screening a few species will be selected for detailed examination. Present alkaloids will be isolated, purified and identified. Dr Trotz will also search for new compounds in the extracts which may have analgesic properties. The results will be compared with data on Strychnos spp. from other regions of the world.

/medicinal plants/ /chemical analysis/

*** /analgesics/

NATURAL PRODUCTS

Grantee F254: Ms Amélie Raharisololalao, Laboratoire de Chimie des Substances Naturelles, Université de Madagascar, B P 906, ANTANANARIVO, Madagascar

"Investigation of the hypotensive saponin of a plant of the Annonaceae family and several of the Rutaceae family"

IFS funding: 28800 SEK 1977 37410 SEK 1979
58000 SEK 1982

Some plants of the Rutaceae family and one plant of the Annonaceae family, which are believed to contain certain alkaloids and steroids, will be phytochemically screened. Active compounds will be extracted and isolated. The structure of each constituent will be elucidated by spectroscopy. Their pharmacological and physiological properties will also be tested.

/medicinal plants/ /chemical analysis/

Grantee F255: Dr Nimal Kumar, Department of Chemistry, University of Peradeniya, PERADENIYA, Sri Lanka

"Chemical investigation of the marine algae of Sri Lanka"

IFS funding: 48000 SEK 1977 63750 SEK 1982

Marine algal flora is abundant off the coast of Sri lanka. In some places algae are collected and dried on a small scale. Red, brown and green algae will be collected in different seasons and their content of useful chemicals will be examined by making extracts with methanol, light petroleum, chloroform and benzene. Chemical constituents will be separated, identified and structures determined. Anti-microbial and pharmacological tests for biological activity will be carried out. Algal polysaccharides of economic importance will be extracted, isolated and processed with industrial extraction in mind.

/algae/ /chemical analysis/ /pharmacology/ /natural products/

NATURAL PRODUCTS

Grantee F256: Dr Abdul Khaleque Choudhury, BCSIR Laboratories, P O Bayezid Bostami, CHITTAGONG, Bangladesh

"Phytochemical and pharmacological studies of a number of selected indigenous medicinal plants"

IFS funding: 33600 SEK 1977

Selected plants from Bangladesh will be phytochemically screened for alkaloids, glycosides, saponin, flavonoids, etc. The plant extracts will be prepared by solvent extraction methods. The constituents will be chemically examined. Any active priciples will be tested pharmacologically and characterized by chemical and physical methods. Useful plants will be cultivated to supply the home market and possibly for export.

/medicinal plants/ /chemical analysis/ /pharmacology/

Grantee F257: Prof Lourdes Cruz, Department of Biochemistry and Molecular Biology, College of Medicine, University of the Philippines, (UP), P O Box 593, MANILA, Philippines

"*Conus* spp. toxins; medical and biochemical applications"

IFS funding: 38400 SEK 1977 44000 SEK 1979
44000 SEK 1980 46400 SEK 1982

Venomous marine snails of *Conus* spp. are abundant in Philippine waters, and pose a health problem. Big snails have enough venom to kill a man. The toxic components in the venoms from three *Conus* spp. will be purified and biochemically characterized. Toxins from at least two species appear to be muscle relaxing and contracting, and may have direct medical application. In addition to the mycotoxins, neurotoxins are also found in most of the examined species. The most powerful toxic biological components will be evaluated by their enzymatic activities. These toxins may become useful reagents in connection with research on the nervous system and muscle physiology. Better knowledge of the poison may also improve the treatment of injuries caused by these snails.

/molluscs/ /poisons/

NATURAL PRODUCTS

Grantee F282: Prof Nabiel Saleh, National Research Centre, El-Tahrir St, Dokki, CAIRO, Egypt

"A chemosystematic study of some Trigonella and Medicago spp."

IFS funding: 14100 SEK 1978 17200 SEK 1979
Completed 1981

The taxonomic positions of some leguminosae have not been definitely determined. Prof Saleh will clarify the systematic problems of Trigonella and Medicago spp. by investigating the chemistry of these plants. The chemical characters to be used are flavonoids, particularly isoflavonoids, which are known components in the plants involved. Isoflavonoids are biosynthetically related to pterocarpans which are known to be biologically active. Chromatography methods will be used to separate components. For identification of compounds, spectrophotometry and chemical and physical methods will be used.

/medicinal plants/ /chemical analysis/

*** /taxonomy/

Grantee F316: Dr Ermias Dagne, Department of Chemistry, Addis Ababa University, P O Box 1176, ADDIS ABABA, Ethiopia

"Investigation of the active constituents of kousso, Hagenia abyssinica"

IFS funding: 31500 SEK 1978

The flowers from the female kousso plant, Hagenia abyssinica, are commonly used for treatment of tapeworms in Ethiopia. The drug is reported to be hepatotoxic, which may be due to the contents of kossotoxin. Dr Dagne will investigate active compounds of the plant and determine their chemical structure; the kossotoxin is of particular interest in this context. Attempts will be made to design simple methods to remove the toxic compound. The crude plant or its extract that is freed from the toxin may then be promoted for use as a taenicide. The flowers of the male kousso plant are more toxic than those from female plants. The chemical nature of this difference will also be investigated.

/traditional medicine/ /medicinal plants/ /chemical analysis/

NATURAL PRODUCTS

Grantee F317: Dr Dorosso Samate, Lycée Ouézzi Coulibaly, BOBO-DIOULASSE, Upper Volta

"Studies on medicinal and toxic plants in Upper Volta"

IFS funding: 27000 SEK 1978

Modern drugs are rarely available in Upper Volta, and the people depend mostly on traditional medicines. Dr Samate will concentrate his work on plants used for treatment of hepatitis and parasites. The plants Sapium grahamii, S. ellipticum and Cochlospermium tinctorium will be screened for alkaloids, glucosides, saponines, steroids and terpenoids. The active compounds will be determined and attempts will be made to develop a suitable method to prepare the drugs on a semi-industrial scale.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /drugs/

Grantee F318: Dr Chang Il-Moo, Natural Products Research Institute, Seoul National University, 28 Yeongun-Dong, Jongro-ku, SEOUL 110, Republic of Korea

"Evaluations of medicinal plants with potential hepatotonic activities"

IFS funding: 36000 SEK 1978 39425 SEK 1980
55100 SEK 1982

Liver diseases such as hepatitis and cirrhosis are quite common among the people of Korea. Dr Chang aims at developing hepatotonic substances and therapeutic agents of plant origin. Selected plants will be screened for active compounds which will be tested on mice. Hepatotonic substances will eventually be tried clinically to confirm activity on humans. If successful, imported medicines may be replaced by equivalent substitutes produced in Korea.

/medicinal plants/ /disease control/ /liver/

NATURAL PRODUCTS

Grantee F319: Dr Soleh Kosela, Department of Chemistry, Faculty of Science, Universitas Indonesia, Jalan Salemba Raya 4, JAKARTA, Indonesia

"Tumor inhibitors from the seeds of Podocarpus javanicus, available in Java, Indonesia"

IFS funding: 27000 SEK 1978

Previous work on Podocarpaceae spp. has shown that some contain anti-leucaemia compounds related to diterpene lactones. No work has so far been done on Podocarpus javanicus, a forest tree providing wood for furniture and buildings. It is expected that it will contain nor-diterpene lactones and other constitutents of scientific and medical interest. Extraction of the seeds will be made by methanol and the compounds will be separated and isolated by traditional methods. Each compound will be investigated by infra-red and mass spectroscopy and NMR. Biological tests of active components will be carried out in cooperation with the Medical School of the University.

/medicinal plants/ /trees/ /chemical analysis/

Grantee F320: Dr Wolde-Ab Yisak, Department of Pharmaceutical Chemistry, University of Ife, ILE-IFE, Nigeria

"Phytochemical investigation of Combretodendron macrocarpum with special reference to its hypotensive principle"

IFS funding: 45000 SEK 1978 41500 SEK 1980
75000 SEK 1983

The bark of the plant Combretodendron macrocarpum has traditionally been used in Nigeria for treatment of constipation, hemorroids and as an abortifacient. Preliminary screening shows that it has also a hypotensive effect. Dr Yisak will separate and purify the chemical compounds by using standard techniques. Biological and pharmacological assays will be applied to find hypotensive activity in the different fractions. The structure of the active components will be elucidated by chemical and spectroscopic methods. Relevant research results and recommendations will be communicated to traditional healers and herbalists.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/

NATURAL PRODUCTS

Grantee F321: Dr Mohammed Mosihuzzaman, Department of Chemistry, University of Dacca, DACCA-2, Bangladesh

"Cellulose derivatives from unretted jute plant"

IFS funding: 45000 SEK 1978 20750 SEK 1980
45000 SEK 1981 51040 SEK 1982

In conventional treatment of jute, the whole plant is retted for 15-20 days under water before the fibre is extracted. The remaining jute stick is discarded. Dr Mosihuzzaman will develop a method to produce cellulose and its derivatives from unretted jute. The fibre and the stick from unretted jute will be separated, and the fibre will be treated to obtain holocellulose and cellulose. The dried fibre and the holocellulose and cellulose will be subjected to direct acetylation, acetoylation-sulphation and carboxymethylation to produce the respective cellulose derivatives in one step. The stick will be treated similarly.

/jute/ /chemistry/ /cellulose/

Grantee F322: Dr Patrick Moyna, Dexin Ltda., Las Heras 1790, MONTEVIDEO, Uruguay

"Composition and functionality of seed epicuticular waxes"

IFS funding: 29250 SEK 1978 37410 SEK 1979
37400 SEK 1980

The relationships between the chemical composition and the function of the epicuticular waxes on Gramineae spp. and Leguminosae spp. seeds will be analysed to better understand their importance in regulating seed dormancy and germination. Their resistance to different kinds of pests will be investigated, as well as their function under different climatic conditions. It would then be possible to develop artificial protective covers that are effective under disadvantageous storage conditions.

/pest control/ /wax/ /chemical analysis/

NATURAL PRODUCTS

Grantee F353: Prof Wilfred Chan, Department of Chemistry, University of the West Indies, (UWI), ST AUGUSTINE, Trinidad and Tobago

"Chemical investigation of medicinal plants of Trinidad and Tobago"

IFS funding: 22000 SEK 1979

Prof Chan will make a selection of plants by a literature survey of medicinal plants of Trinidad and Tobago. Plant material will be collected and the extracts will be separated into pure components, which will be biologically tested. Chemical investigations will be carried out on the new compounds. Voucher specimens of the collected plants will be deposited in a herbarium.

/medicinal plants/ /chemical analysis/

Grantee F354: Dr A A Leslie Gunatilaka, Department of Chemistry, University of Peradeniya, PERADENIYA, Sri Lanka.

"Chemical investigation of medicinal and related plants of Sri Lanka"

IFS funding: 26400 SEK 1979

Large parts of the population of Sri Lanka depend on traditional medicine. Dr Gunatilaka will investigate medicinal plants used in the traditional Ayurvedic medicine, as well as their botanical relatives. The plants will be extracted and screened for biological and anti-microbial activity. The active extracts will be fractionated, and the fractions bearing a particular activity will be subjected to further separation to isolate the bioactive constituents. Identification and testing will be carried out, as well as attempts at the synthesis of bio-active compounds.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/

NATURAL PRODUCTS

Grantee F355: Dr Biswapata Mukherjee, Dr B C Roy Post Graduate Institute of Basic Medical Sciences, Calcutta University, 244B Acharya J C Bose Road, CALCUTTA 700 020, India

"Chemical and pharmacological studies on three Indian medicinal plants"

IFS funding: 22000 SEK 1979 35200 SEK 1980
56000 SEK 1981 Completed 1983

Dr Mukherjee will investigate three plants commonly used in Indian folk medicine, viz, Tiliacora racemosa, Flacourtia indica and Annona squamosa. Crude extracts will be prepared, and work on the separation, isolation and identification of the compounds will be carried out. The chemical structures will be elucidated, and the active components will be tested pharmacologically.

/traditional medicine/ /medicinal plants/ /chemical analysis/

Grantee F357: Dr Vitchu Lojanapiwatna, Department of Chemistry, Faculty of Science, Prince of Songkla University, HAAD YAI, Thailand

"Chemical investigations of some Thai plants belonging to the family Gneteceae"

IFS funding: 22000 SEK 1979 28600 SEK 1980
56000 SEK 1981

Dr Vitchu Lojanapiwatna will undertake a study on Gnetum spp. which have not been thoroughly investigated. Initially, the work will concentrate on species with alkaloid contents. The structure of the extracted components will be determined and synthesized, and pharmacological and physiological testing will be carried out. Plants with no akaloid con ents will be investigated for the presence of other constituents.

/medicinal plants/ /chemical analysis/ /pharmacology/

NATURAL PRODUCTS

Grantee F359: Dr Duangta Kanjanapothi, Department of Pharmacology, Faculty of Medicine, Chiang Mai University, CHIANG MAI, Thailand

"Abortifacient: Investigation of effects of medicinal plants on uterine muscle"

IFS funding: 35200 SEK 1979 38060 SEK 1980

Alcohol extracts of mint (Mentha arvensis) are used as an abortifacient by women in Northern Thailand. Dr Duangta Kanjanapothi will carry out pharmacological and phytochemical studies on three plants of the Labiatae family, viz, Mentha arvensis, Ocimum basilicum, and Ocimum sanctum. Crude extracts and fractions of plant extracts will be tested for their uterotonic activities on the uterus of pregnant and non-pregnant rats by in vitro and in vivo experiments. The mechanism of the uterotonic activity and the effects on other types of smooth muscles will be investigated, as well as the acute and chronic toxicity of the purified uterotonic fractions.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/ /contraceptives/

Grantee F396: Dr Mahabir Gupta, Vicerrectaria de Investigaciones y Postgrado, Universidad de Panamá, Ciudad Universitaria "Octavio Méndez Pereira", Estafeta Universitaria, PANAMA, Panamá

"Isolation and characterization of bioactive principles from Spigelia anthelmina, Neurolaena lobata, and Antigonum leptopus"

IFS funding: 41710 SEK 1979 49000 SEK 1981
63000 SEK 1983

The flora of Panama are among the richest in the world. So far no systematic investigations have been conducted to explore their potential. Dr Gupta will work with three plant species, viz, Spigelia anthelmia, Neurolaena lobata, and Antigonum leptopus. The concentrated fractions from the plant material will be subjected to pharmacological testing to identify the active fractions. The bioactive compounds will then be isolated and characterized.

/medicinal plants/ /pharmacology/ /chemical analysis/

NATURAL PRODUCTS

Grantee F397: Dr Pintip Ruenwongsa, Department of Biochemistry, Faculty of Science, Mahidol University, Rama VI Road, BANGKOK 4, Thailand

"Studies on the relationship between anti-thiamin factors in tea, thiamin depletion and neurological symptoms"

IFS funding: 34830 SEK 1979 54320 SEK 1981

Thiamin deficiency is common in the northern parts of Thailand. It is to a large extent caused by consumption of concentrated tea with high contents of tannin, an anti-thiamin agent. The symptoms are nerve and muscular dystrophy. Dr Pintip Ruenwongsa will carry out experiments on animals to investigate whether the tannin can cause depletion of brain thiamin or have a negative effect on the activity of thiamin-dependent enzymes in the brain. The possible effect of ascorbic acid to prevent thiamin depletion by tea or tannin will also be tested.

/vitamin deficiency/ /tea/

Grantee F398: Dr Vijaya Chand, School of Natural Resources, University of the South Pacific, (USP), P O Box 1168, SUVA, Fiji

"Studies of medicinal plants in Fiji with special attention to flavonoids"

IFS funding: 28810 SEK 1979 52500 SEK 1982

With the rapid development of modern medical care in the Pacific, the knowledge of folk medicine is gradually being forgotten. Dr Chand will collect information on plants traditionally used in folk medicine, with particular attention to plants reputed to have anti-fertility properties. The effect of the isoflavones in these plants will be further investigated, and the economics of locally producing the active substances will be evaluated.

/traditional medicine/ /medicinal plants/ /contraceptives/

NATURAL PRODUCTS

Grantee F434: Mr Miguel Castiglioni, Centro Cooperativista Uruguayo, Dante 2252, MONTEVIDEO, Uruguay

"Preparation, analysis and evaluation of new essential oils derived from the Uruguayan native flora"

IFS funding: 37350 SEK 1980

Essential oils are important products on the international market place. The Centro Cooperativista Uruguayo and its advisory group DEXIN Ltda. have started studies concerning the installation of a local essential oil industry in Uruguay. In search of new, commercially-important sources of essential oils, a number of native odoriferous plants will be evaluated. The oils will be prepared and analysed on a laboratory and a pilot plant scale with a view to developing a local essential oil industry.

/essential oils/ /chemical analysis/

Grantee F435: Dr Salah El Hussein, Agricultural Research Corporation, Gezira Research Station, Horticulture Section, MEDANI, Sudan

"Pesticidal constituents of seeds of *Lupinus termis*"

IFS funding: 37350 SEK 1980

The use of synthetic pesticides is expanding in Sudan, a country predominately dependent on agriculture. The cost for these pesticides is high, and they can be hazardous to humans and animals. Natural pesticides, on the other hand, are often credited with safety and a desirable selectivity of action. The seeds of *Lupina termis* are locally reputed to contain insecticidal agents. Dr El Hussein will, together with a toxicologist, assay the pesticidal properties of crude and purified extracts of *L. termis* seeds by testing on selected insects. This will be followed by isolation and characterization of the specific active compound(s).

/plants/ /chemical analysis/ /insecticides/

NATURAL PRODUCTS

Grantee F437: Dr Lakshmi Arambewela, Ceylon Institute of Scientific and Industrial Research, (CISIR), P O Box 787, COLOMBO 7, Sri Lanka

"Studies on medicinal plants of Sri Lanka"

IFS funding: 18675 SEK 1980 22400 SEK 1981
Completed 1983

About 25% of the plant species in Sri Lanka are believed to be endemic. A number of these plants are reported to have medicinal properties and are used in traditional medicine. Dr Arambewela will carry out chemical and pharmacologial screenings of extracts from plants belonging to Loganiaceae, Rubiaceae, Apocynaceae and Solanaceae families. A research objective will be to find out whether ayurvedic medicinal plants imported from India can be substituted by local plants of the same families.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/

Grantee F438: Mr Mohamed Damak, Département de Chimie, Faculté des Sciences et Techniques de Sfax, Route de la Soukra, B P W, SFAX, Tunisia

"Chemistry of medicinal plants in Tunisia"

IFS funding: 40670 SEK 1980

Medicinal plants in Tunisia are so far little investigated from the chemical point of view. Species of some plant families will be identified, and information on their medicinal utilization collected. The plants will in particular be screened for alkaloids. Isolation and identification of the compounds will be made, as well as structural and chemical studies. Experiments with synthesis of the active compounds will also be carried out. Toxic plants will be identified and their active compounds pharmacologically tested. The plants will be screened for alkaloids. Isolation and identification of the compounds will be made, as well as structural and chemical studies. Experiments with synthesis of the active compounds will also be carried out. Toxic plants will be identified and their active compounds pharmacologically tested.

/medicinal plants/ /chemical analysis/ /toxic substances/

*** /taxonomy/

NATURAL PRODUCTS

Grantee F439: Dr Zheng Chong-zhi, Shanghai Institute of Organic Chemistry, Academia Sinica, 345 Linglin Lu, SHANGHAI, China

"Research on enhancing factors for silkworm spinning from microbial lipid"

IFS funding: 39010 SEK 1980 48000 SEK 1981

China is the largest silk producing country in the world and silk is the second largest Chinese export. Lack of land for mulberry plantations, however, limits production. Dr Zheng has discovered that certain extracts can increase the production of silk without increasing the amount of mulberry leaves fed to the silkworms. Dr Zheng will isolate the active component of these extracts and determine its chemical structure. The mechanism of action will then be investigated and industrial production of the compounds attempted.

/silk/ /silkworms/ /feed/

Grantee F440: Dr Gan Li-xian, Shanghai Institute of Organic Chemistry, Academia Sinica, 345 Linglin Lu, SHANGHAI, China

"Studies on the active constituents of the plant kuxuanshen (Picria fel-tarrae, Scrophulariaceae family)"

IFS funding: 29050 SEK 1980 50000 SEK 1981
Completed 1980

The plant kuxuanshen grows wild in the Kwangsi province of China. It has long been used as a herbal medicine by the local people to treat inflammations and tumours. A preliminary study of this plant showed that the crude extract of this plant has an obvious anti-tumour activity when tested on mice. Dr Gan will try to isolate the active substance and determine its chemical structure.

/traditional medicine/ /medicinal plants/ /chemical analysis/

NATURAL PRODUCTS

Grantee F441: Prof Kandiah Balasubramaniam, Department of Biochemistry, Faculty of Medicine, University of Colombo, P O Box 271, COLOMBO 8, Sri Lanka

"Characterization, purification and mechanism of action of α-galactosidase of coconut kernel"

IFS funding: 23240 SEK 1980 29000 SEK 1982

Coconut oil is now extracted by heating and pressing copra. The oil produced in this way is not of the highest quality. The aim of this project is to develop a wet process in which oil and protein are separated from young coconuts. Oil and protein are bound to each other in an emulsion by galactomannan. The α-galactosidase isolated from coconut kernels could be used to break this emulsion. The characteristics of this enzyme and the mode of breakdown of galactomannan are to be studied.

/coconuts/ /edible oils/ /chemistry/

Grantee F442: Dr Marian Addy, Department of Biochemistry, University of Ghana, P O Box 54, LEGON, Ghana

"Anti-diabetic traditional medicinal plants: metabolic effects"

IFS funding: 33200 SEK 1980 52920 SEK 1981

The objective of the project is to set up laboratory animal assays corresponding to the different etiologies of Diabetes mellitus, and use them to test the effects of medicinal plants used to treat diabetes. The tests will involve measuring levels of certain metabolites, as it is expected that the anti-diabetic plant compound will have a normalizing effect on the level of some of these. It is expected that a better understanding of the mode of action of these plants will be obtained. Another possible benefit of the project would be that the efficacy of various plant preparations used against diabetes by herbalists in the country could be tested and evaluated.

/medicinal plants/ /pharmacology/ /disease control/ /diabetes/

NATURAL PRODUCTS

Grantee F443: Dr Johnson Foyere Ayafor, Département de Chimie Organique, Faculté des Sciences, Université de Yaoundé, B P 812,YAOUNDE, United Republic of Cameroon

"Examination of Teclea campestris and Vepris louisii, endemic Cameroonian Rutaceae spp. with reputed medicinal properties"

IFS funding: 31125 SEK 1980 54600 SEK 1981
75000 SEK 1982

Little general phytochemical work has been done in Cameroon considering the rich variety of plants. At the same time it is estimated that 80% of the population relies on traditional medicinal plants for their health care. Dr Foyere Ayafor will do phytochemical work on two plants used in traditional medicine, namely Teclea campestris and Vepris louisii. Phytochemical work on T. campestris may also help to clarify the botanical position of this plant.

/traditional medicine/ /medicinal plants/ /chemical analysis/

Grantee F447: Dr Richard Gunawardene, Department of Chemistry, University of Peradeniya, PERADENIYA, Sri Lanka

"Conversion of Sri Lankan apatite to phosphorus fertilizer"

IFS funding: 41500 SEK 1980 75000 SEK 1983

A large deposit of rock phosphate, apatite, has been discovered in Sri Lanka. Due to the insolubility of this mineral, it cannot be applied directly as a phosphatic fertilizer. Dr Gunawardene will investigate the possibilities of converting the mineral to a more soluble form. Two methods will be studied: the apatite will be sintered with different flux materials. Acidulation with mineral acids will also be tested. Suitable products will be subjected to pot and field trials with a view to using this material as a P-fertilizer for short-term crops, such as paddy rice.

/chemical fertilizers/ /phosphates/ /chemistry/

NATURAL PRODUCTS

Grantee F448: Dr Hin Wing Yeung, Department of Biochemistry, Chinese University of Hong Kong, SHATIN N T, Hong Kong

"Chemical and pharmacological studies on the abortifacient protein of the Chinese herb Trichosanthes kirilowii"

IFS funding: 41500 SEK 1980

Written records of the utilization of the Chinese herb Tien-Hua-Fen to induce menstruation and to expel the placenta can be traced back for more than 2 000 years. Scientists in mainland China have recently reported the isolation of trichosanthin from the plant. Trichosanthin was found to be effective in inducing abortion in mice and humans. Dr Yeung has isolated a new mid-term abortifacient protein from the same plant. The abortifacient was shown to be a larger but less basic protein molecule than trichosanthin. The aim of the project is to characterize the chemical and pharmacological properties of the pure abortificaient protein.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/ /abortion/

Grantee F481: Dr Duang Buddhasukh, Department of Chemistry, Faculty of Science, Chiang Mai University, CHIANG MAI, Thailand

"Surfactant properties of dammar resin and related natural products"

IFS funding: 30800 SEK 1980

Emulsifying agents have a wide range of technical applications in food, pharmaceuticals and textiles. Dammar resin is rather common as a caulking substance in Thailand. Dr Duang Buddhasukh will continue investigations on preparation methods of dammar resin, and on its emulsifying properties. The crude fractionated and chemically modified resins will be prepared and separately tested for emulsifying power and emulsion stability. Other gums and resins will also be tested for the same properties. The most suitable form of emulsifier, its specific behaviour and range of application, and the best method to prepare it will be determined.

/resins/ /gums/

NATURAL PRODUCTS

Grantee F482: Dr Mesbahuddin Ahmad, Department of Chemistry, Jahangirnagar University, Savar, DACCA, Bangladesh

"Chemical communication between living organisms"

IFS funding: 22000 SEK 1980

The use of pheromones and other behaviour controlling chemicals is often more acceptable from the environmental point of view than conventional pesticides. This project aims at finding the substances used for chemical communication between various pests and their host crops. Dr Ahmad will try to isolate the behaviour-releasing odour signals of the pests. The chemical complex will be separated, identified and biologically tested for activity.

/pest control/ /food crops/ /chemical analysis/ /biological control/

*** /pheromones/

Grantee F483: Dr Ashenafi Tessema, Agricultural Experiment Station, Addis Ababa University, P O Box 32, DEBRE ZEIT, Ethiopia

"Anti-fungal constituents of Rhamnus prinoides"

IFS funding: 22000 SEK 1981

Rhamnus prionoides is a plant traditionally used for curing different types of skin infections. Preliminary studies have indicated that the methanol extract of the plant is anti-fungal for different dermatophytes, such as Microsporum gypseum, M. ferrugenium and Trichophyton scho. Dr Ashenafi Tessema will make extractions of the Rhamnus prinoides fruit with different solvents and test the different fractions. The effective fraction will be separated, and the active component isolated and characterized. A study of dilution versus activity of the component will also be made.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /disease control/ /skin/

NATURAL PRODUCTS

Grantee F484: Dr Luis Corcuera, Departamento de Química, Facultad de Ciencias Básicas y Farmacéuticas, Universidad de Chile, Casilla 653, SANTIAGO, Chile

"Role of hydroxamic acids of Gramineae spp. in resistance to aphids"

IFS funding: 35640 SEK 1980 69020 SEK 1982
105750 SEK 1983

Aphids and viruses cause great losses of cereal crops in Chile. Cyclic hydroxamic acids seem to play a role in the defence of the plant against insects, fungi and bacteria. Preliminary studies have indicated that several Gramineae spp. are resistant to the aphid Metopolophium dirhodum. Dr Corcuera will determine the degree of protection the hydroxamic acids confer on Gramineae spp. throughout the life cycle, and select the most appropriate varieties to be grown in areas heavily infested with aphids. The toxicity of hydroxamic acids to the five commonest species of cereal aphids in Chile will be determined by feeding experiments.

/pest control/ /cereals/ /chemistry/

Grantee F485: Dr Yun Cheung Kong, Department of Biochemistry, Chinese University of Hong Kong, SHATIN N T, Hong Kong

"Chemistry and pharmacology of medicinal gums"

IFS funding: 11000 SEK 1980

A great number of gums are used in Asian traditional medicine, and have been known in Chinese medicine since 600 A D. Because of the non-polar nature of these gums, their bioactivity is little documented; the gums cannot be put in solutions or suspensions for bioassay. Dr Kong will cooperate with Prof Aynehchi (IFS grantee No F157, Iran) who has found that some of the medicinal gums contain more than 50% of steroids and triterpenes. The bioactive compounds will be isolated by means of a bioassay method. Phyto-chemical work will be carried out, as well as biological tests of the isolates.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /gums/

NATURAL PRODUCTS

Grantee F486: Dr Clement Adewunmi, Drug Research and Production Unit, Faculty of Pharmacy, University of Ife, ILE-IFE, Nigeria

"Schistosomicide screening and evaluation of Nigerian medicinal plants"

IFS funding: 22000 SEK 1980 58000 SEK 1982

Schistosomiasis is one of the most common parasitic diseases in Southern Nigeria. Dr Adewunmi will screen medicinal plant extracts for schistosomicidal activity by both *in vitro* and *in vivo* techniques. The toxicity of the promising extracts will be investigated, and pharmacological studies carried out. An efficient plant extract could be a cheap way of controlling the occurrence of schistosomes.

/medicinal plants/ /pharmacology/ /disease control/ /schistosomiasis/

Grantee F487: Dr Alice Dzakpasu, Department of Chemistry, Faculty of Science, University of Cape Coast, CAPE COAST, Ghana

"Isolation and utilization of essential oils"

IFS funding: 25520 SEK 1980

The demand for essential oils is large, and new sources would be of great economical interest. Dr Dzakpasu will work on lemon grass, *Cymbopogon citratus*, which is common in Ghana. The citral will be separated from the extracted oil and the α- and β-ionones synthesized. The physical properties of the products will be determined, and the yield and quality related to the type of grass, season of collection, efficiency of the extraction processes and the condensing agent. The effect of temperature, pressure and duration of some of the operations will also be studied. An appropriate processing method will be developed, and a cost/benefit analysis of the production carried out.

/grasses/ /chemical analysis/ /essential oils/

NATURAL PRODUCTS

Grantee F488: Mr Sarjana Sidik, Laboratory of Pharmacognosy, Department of Pharmacy, Faculty of Science, Universitas Negeri Padjadjaran, Jalan Dipati Ukur 35, BANDUNG, Indonesia

"The triterpenoids and alkaloids from the fruit of Morinda citrifolia, Rubiaceae family"

IFS funding: 28600 SEK 1980

The fruit of Morinda citrifolia is used traditionally to treat liver diseases, beri-beri, hemorrhages, and coughs. Preliminary studies have indicated the presence of alkaloids and triterpenoids in the fruit extract. Mr Sidik will continue to test the different fractions for alkaloids and triterpenoids. The biologically active fractions will be separated and promising components will be isolated and their structures elucidated. The active components will then be tested for anti-hypertensive and anti-diabetes properties.

/medicinal plants/ /fruits/ /chemical analysis/ /pharmacology/ /disease control/ /traditional medicine/

Grantee F489: Dr Ampai Panthong, Department of Pharmacology, Faculty of Medicine, Chiang Mai University, CHIANG MAI, Thailand

"Anti-asthmatic properties of some Thai medicinal plants"

IFS funding: 37400 SEK 1980 74625 SEK 1983

Herbal medicines are currently used for treatment of asthma and hypertension. Dr Ampai Panthong will investigate Schefflera venulosa (Araliaceae), Millingtonia hortensis (Verbenaceae) and Spilanthes acmella (Compositae) for bronchodilating activity. The crude extracts will first be tested on guinea pigs. Pharmacological and phytochemical studies will then be carried out to identify the fractions with bronchodilating activity. Pharmacological studies on the mode of action of the component will be made on both isolated and intact preparations. Effects on other types of smooth muscles will also be investigated, as well as acute and chronic toxicity.

/medicinal plants/ /chemical analysis/ /pharmacology/

NATURAL PRODUCTS

Grantee F490: Dr Abdul Khaleque, BCSIR Laboratories, Dhanmondi, P O Box 5010, DACCA-5, Bangladesh

"Extraction and purification of datura oil and studies of its anti-fertility effect. Pharmacological and clinical testing of the oil"

IFS funding: 22000 SEK 1980

The seeds of Datura fastuosa yield a non-toxic oil, which has a contraceptive effect on rats. Dr Khaleque will make further studies of datura oil with respect to its anti-fertility effect. Pharmacological, clinical and histological tests will be carried out on rats and guinea pigs and later on humans with a view to developing a contraceptive drug.

/medicinal plants/ /pharmacology/ /contraceptives/

Grantee F491: Ms Dang Hong Thuy, Département de Pharmacognosie, Faculté de Pharmacie, 13 Le Thanh Tong, HANOI, Viet Nam

"Study of selenium rich plants and the role of the selenium component in traditional medicine in Viet Nam"

IFS funding: 17600 SEK 1980 39200 SEK 1981
52500 SEK 1983

Some plants, which have been used successfully in Viet Nam to cure certain cardio-vascular diseases and rheumatoid arthritis, have high selenium contents. Ms Dang will determine in which plants the selenium content is high enough to have a pharmacological or toxic effect. Extracts from the plants will be chemically analyzed, and the effect of the selenium component on some biological processes will be investigated.

/traditional medicine/ /chemical analysis/ /medicinal plants/

NATURAL PRODUCTS

Grantee F492: Dr Pham Thanh Ky, Département de Pharmacognosie, Faculté de Pharmacie, 13 Le Thanh Tong, HANOI, Viet Nam

"Preparation of plant-derived medicines from Aconitum sp. Strychnos sp., Cassia tora and Polygonum odorum"

IFS funding: 39600 SEK 1980 63750 SEK 1983

The preparation of plant-derived medicine is done according to tradition, and varies in different regions. Different plants are sometimes utilized under the same name, and the effect of the drug may therefore be uncertain or sometimes even toxic. The grantee will identify the utilized plants and determine which of them are not suitable for the preparation of medicines. Suitable methods of preparing the drugs will be established, and chemical studies will be carried out on the extract before and after the drug preparation. Pharmacological studies will be carried out to determine the therapeutic effect of the drug.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/ /drugs/

*** /taxonomy/

Grantee F499: Prof Kim Yong Hae, Department of Chemical Science, Korea Advanced Institute of Sciences and Technology, P O Box 150, Chongryang, SEOUL, Republic of Korea

"Isolation and structural study of biologically active compounds from Korean sea animals (Holothurian artra)"

IFS funding: 28160 SEK 1980 45820 SEK 1982

Sea cucumbers and sea slugs are common along the Korean coast, and are used as food or in folk medicine. Sea cucumbers are often consumed raw, and food poisoning is quite common. The reason for this is not known. Dr Kim will investigate the chemical compounds of these sea organisms, and isolate the biologically active compounds. The promising components will be purified and biologically tested.

/traditional medicine/ /aquatic fauna/ /chemical analysis/

NATURAL PRODUCTS

Grantee F500: Dr Raphael Munavu, Department of Chemistry, University of Nairobi, P O Box 30197, NAIROBI, Kenya

"Studies on non-conventional sources of vegetable oils in Kenya"

IFS funding: 26400 SEK 1980

Vegetable oil is, to a large extent, imported into Kenya; the conventional sources for vegetable oils are limited in the country. Dr Munavu will evaluate the oil contents of the seeds of indigenous wild plants with a reasonable potential for cultivation. Seeds grown in the arid and semi-arid regions will be of particular interest. The chemical and physical properties of the oils will be determined, as well as their chemical composition. The meal left after the oil extraction will be analysed in order to determine its value as animal feed.

/oilseeds/ /vegetable oils/ /chemical analysis/ /feed production/

Grantee F528: Dr Kan Chantrapromma, Department of Chemistry, Faculty of Science, Prince of Songkla University, HAAD YAI, Thailand

"Isolation and structure elucidation of some biological active compounds from Thai medicinal plants"

IFS funding: 50000 SEK 1981 75000 SEK 1982

The Thai flora are very rich, and many plants have successfully been used in traditional medicine. The chemical constituents of many plants, and their biological activity still remain to be investigated. Dr Kan Chantrapromma will work on six plants: Uvaria purpurea, Artabotrys harmadii, A. siamensis, Rauwenhoffia siamensis, Curculigo latifolia, and Piper rostratum. Collected plants will be botanically classified. The crude extracts will be tested for biological activity. Pure compounds isolated from the active fractions will be subjected to pharmacological studies along with clinical tests.

/traditional medicine/ /medicinal plants/ /pharmacology/

*** /taxonomy/

NATURAL PRODUCTS

Grantee F529: Dr H Osore, Chemistry-Bioassay Research Unit, ICIPE Research Centre, P O Box 30772, NAIROBI, Kenya

"Pharmacological and clinical investigations of plants used in the traditional obstetric practice of the people of Kenya"

IFS funding: 30000 SEK 1981 56250 SEK 1983

The cost of pharmaceuticals in Kenya is high, and to cut down drug importation, efforts to investigate the resources of medicinal plants are being made. It is hoped that cheap primary health care can be provided by plant-derived drugs. Dr Osore will work on Triumfetta spp., which have been used traditionally in obstetric practice. Pharmacological screening by in vitro and in vivo testing methods will be made to establish the pharmacological activity and toxicity. Phytochemical studies on species with interesting activity will be made, and the active constituents isolated. Clinical trials using both pure and crude extracts will be carried out to assess the efficiency in humans.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/

Grantee F530: Dr Evelyn Mendoza, Institute of Plant Breeding, College of Agriculture, University of the Philippines at Los Banos, (UPLB), College, LAGUNA 3720, Philippines

"Biochemical studies on cowpea regarding its nutritional improvement and pest/disease resistance"

IFS funding: 20000 SEK 1981 34800 SEK 1982
72000 SEK 1982

Cowpeas, Vigna unguiculata, are cultivated to an increasing extent because of their high protein content, high yield, and relatively few enzyme inhibiting constituents. Dr Mendoza will try to provide a more solid basis to improve varieties by making a biochemical assessment of desirable properties. Varieties to be studied will be selected according to total protein content, yield and pest/disease resistance. The protein and amino acid composition will be determined, and digestibility and trypsin inhibitors investigated. The effect of tannin and lipozygenase components will also be studied.

/cowpeas/ /food chemistry/

NATURAL PRODUCTS

Grantee F531: Dr Eric Karunanayake, Department of Biochemistry, Faculty of Medicine, University of Colombo, P O Box 271, COLOMBO 8, Sri Lanka

"Investigation of oral hypoglycaemic activity of medicinal plants used in the treatment of Diabetes mellitus in Ayurvedic medicine"

IFS funding: 25000 SEK 1981 75000 SEK 1983

The Ayurvedic medical system provides basic health care for more than half the Sri Lankan population. Diabetes mellitus is a common disease in Sri Lanka and is treated with extracts from plants with oral hypoglycaemic activity. Dr Karunanayake will work on Calasia reticulata. After botanical identification of the plant, a preliminary screening for oral hypoglycaemic activity of aqueous extracts of different plant parts will be carried out. Interesting extracts will be chemically fractionated to isolate and purify the principles. The pure components will be screened for biological activity to identify the active constituents. Plant extracts will be prepared throughout the year to determine the best time for harvesting.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/ /diabetes/

Grantee F532: Dr Atlaf Hussain, Nuclear Institute for Agriculture and Biology, P O Box 128, FAISALABAD, Pakistan

"Isolation and characterization of the volatile aromatic compounds from a local variety of rice, Basmati-370 (scented rice, Cryza sativa)"

IFS funding: 50000 SEK 1981 75000 SEK 1982

Basmati rice is a major crop in Pakistan and is also a major export item for the country. Its popularity and international demand lies in its cooking quality and flavour. Dr Hussain will make a systematic investigation of the volatile compounds responsible for the aroma of Basmati rice to develop a quality control method to help plant breeders to assess if the new germplasm generated by them has the required flavour, and to get fundamental knowledge of its flavour chemistry. The aromatic contents of different mutants of rice will also be compared.

/rice/ /food chemistry/

NATURAL PRODUCTS

Grantee F533: Dr Osman Hassan Abdirizak, Faculty of Industrial Chemistry, Somali National University, P O Box 1081, MOGADISHU, Somalia

"Isolation and chemical characterization of pharmacologically active compounds from endemic plants used in Somalian traditional medicine"

IFS funding: 50000 SEK 1981

A large proportion of the Somalian people live in rural areas and depend entirely on medicinal plants for their health care. Dr Abdirizak will work on native species of Commiphora, Boswellia and Vernonia. The collected plants will be botanically identified, extracted, and lyophilized. Active compounds from extracts with interesting pharmacological activity will be isolated and their chemical properties investigated with a view to produce more effective plant-derived drugs.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /pharmacology/ /drugs/

*** /taxonomy/

Grantee F534: Prof Abdullahi Shek Elmi, Department of Pharmacology, Somali National University, P O Box 835, MOGADISHU, Somalia

"Pharmacological and toxicological study of endemic plants used in traditional medicine in Somalia"

IFS funding: 50000 SEK 1981 69000 SEK 1983

Traditional medicine plays an important role in health care in Somalia. The country is rich in native medicinal plants, many of which are known for their healing or toxic properties. Mr Shek Elmi will concentrate his work on endemic native commiphera species. Initial pharmacological and toxicological screenings of the different crude extracts will be made. Interesting extracts will be further investigated; the active principles will be isolated and purified, and further tested for their biological activity. Classical clinical evaluation of the plant-derived drugs will be performed, and information on the positive or negative effects caused by the drugs will be made known through the traditional healers.

/medicinal plants/ /chemical analysis/ /pharmacology/ /drugs/

NATURAL PRODUCTS

Grantee F535: Dr Yogendra Shukla, Central Institute of Medicinal and Aromatic Plants, Post Bag No 1, R S M Nagar, LUCKNOW 226 016, India

"Search for new glycosidic substances from Indian plants for non-specific resistance"

IFS funding: 25000 SEK 1981

Tonic extracts from plants are among the most ancient remedies in folk medicine. Usually the plants are rich in saponins; in some cases alkaloids have also been found. Dr Shukla will study plants with tonic properties mainly from the Araliaceae family. They will be screened for saponins, and their chemical structure determined. The active components will be tested for specific physiological activities.

/traditional medicine/ /medicinal plants/ /chemical analysis/

Grantee F536: Dr Abel Moneim Satti, Department of Chemistry, Faculty of Science, University of Khartoum, P O Box 321, KHARTOUM, Sudan

"Isolation of pharmacologically active constituents from certain plants used in Sudanese folk medicine"

IFS funding: 45000 SEK 1981

Lachnosiphonium niloticum (Rubiaceae sp.) stem bark has been found to contain steroids and/or triterpenes, alkaloids and flavonoid glucosides, and has been used as an anti-rabies drug. Solanum dubium (Solanaceae spp.) contains the same type of components but also tannins and saponins. It has been used to treat skin tumours. Dr Satti will extract relevant parts of the two plants and make a preliminary screening for the desired effects. A suitable separation method will be tried out and monitored by tests for biological activity. The structure of the pure compounds will be determined, and interesting principles will then undergo further pharmacological investigations.

/medicinal plants/ /chemical analysis/ /pharmacology/

NATURAL PRODUCTS

Grantee F537: Dr R P Nandi, Research Laboratory, Directorate of Cinchona & Other Medicinal Plants, P O Mungpoo, DARJEELING, West Bengal, India

"Improvement studies on emetine yielding ipecac plants, Cephaelis ipecacuanha, and on biosynthesis of its alkaloids"

IFS funding: 25000 SEK 1981

The ipecac plant, Cephaelis ipecacuanha, originates from South America, but has successfully been introduced and cultivated in the hills of Darjeeling in India. Dr Nandi will try to improve the agrotechnical methods to get a better production of ipecac roots with higher efficiency of alkaloid synthesis. Identifica- of precursors will be attempted, and conditions for optimum conversion of phenolic alkaloids into non-phenolic ones investigated. Chemical analyses of different biochemical properties, including the alkaloid fractions, will be made at different stages of maturity of the plant.

/medicinal plants/ /chemical analysis/ /drugs/

Grantee F538: Mr M Abdul Gofur, BCSIR Laboratories, Rajshahi, P O Kasla, RAJSHAHI, Bangladesh

"Investigation on fat from the kernal of mango (Mangifera indica)"

IFS funding: 50000 SEK 1981

Many varieties of the mango fruit are grown in the northeast of Bangladesh, and mango is one of the major cash crops. The stone, which represents up to 20% of the fruit weight, is thrown away as waste, although the kernel contains 9-15% oil. Recent investigations on mango kernel fat show that the fat is edible and that there is some resemblance to cocoa butter. Mr Gofur will investigate the physical and chemical properties of the mango kernel oil, and the variation of oil content and lipid classes in different mango varieties. The changes of quality of the oil, and lipid class composition during storage of the kernel will be studied, as well as variations between oils extracted under different conditions. The purpose of the project is to identify factors important to the extraction of mango oil with a stable composition and quality.

/fruits/ /agricultural wastes/ /chemical analysis/ /edible oils/

NATURAL PRODUCTS

Grantee F573: Dr R Muturi Njogu, Department of Biochemistry, University of Nairobi, P O Box 30197, NAIROBI, Kenya

"Protective effects of azadirachtin against livestock ectoparasites and endoparasites"

IFS funding: 56000 SEK 1981 60000 SEK 1983

Insect-borne diseases are a major impediment to livestock production in large areas of Kenya. Three plant species growing in semi-arid areas, Melia azedarach, M. volkensi and Azadirechta dirachtin, which are repellent to insects, ticks and nematodes, have regulatory effects on their growth. Dr Njogu will try to improve methods of extraction and partial purification of the repellent substances. The extracts will be administered to livestock both externally and internally to assess the feasibility of utilizing it for protection against bites by ectoparasites and for elimination or suppression of endoparasites. If the experiments are successful, mass production of the extract will be attempted.

/plants/ /chemistry/ /natural products/ /insecticides/ /disease control/ /animals/ /animal health/

Grantee F574: Dr Vijaya Kumar, Department of Chemistry, University of Peradeniya, PERADENIYA, Sri Lanka

"Studies on citrus and other rutaceous plants of Sri Lanka"

IFS funding: 44800 SEK 1981

Citrus oils provide an important group of flavours or scents. The flavour industry in Sri Lanka is developing, but is still dependent on imported constituents, such as citrus oils. Dr Kumar will investigate the possibility of extracting citrus oils from locally-available citrus fruits, to be used for the production of fruit drinks. Extraction of the "petitgrain" oils from citrus leaves will be attempted, as well as separation of the oils into terpeneless fractions. Where possible, isolation of compounds will be achieved by chromatographic methods.

/citrus fruits/ /edible oils/ /chemistry/ /food additives/

NATURAL PRODUCTS

Grantee F575: Dr Viqar Uddin Ahmed, H E J Research Institute of Chemistry, University of Karachi, KARACHI-32, Pakistan

"Investigation of the chemical constituents of Andrachne aspera"

IFS funding: 54880 SEK 1981 Completed 1983

More than half the population in Pakistan depends on plant derived drugs. Andrachne aspera (Euphorbiaceae sp.) grows wild and is endemic to Pakistan. Its roots are used for treating eye diseases. Previous work shows that alkaloids from the plant have useful biological activities. Dr Ahmad will isolate the total alkaloids from the roots and aerial parts, and then separate them. The structure of the pure alkaloids will be elucidated and tested for biological activity. Work on the acidic and neutral constituents of the plant will also be carried out.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /eye diseases/

Grantee F582: Ms Boun Louane Sisouvanh, Comité d'Etat de Sciences et Technique, Présidence du Conseil des Ministres, VIENTIANE, Lao People's Democratic Republic

"Identification of active principles in plants utilized to cure leucorrhea, prolapses and viral hepatitis"

IFS funding: 39200 SEK 1981

Medical treatment is almost entirely based on plant medicine in Lao People's Democratic Republic. Leucorrhea, prolapses and viral hepatitis have traditionally been treated with "Vane Loua dio", with a rhizome, and a kind of liane, "Khi minh Khena", with good results. Ms Boun Louane will make extracts from "Vane bona dio" and "Khi minh Khena", which will be tested for biological activity. Interesting compounds will be purified and further tested, and their structure determined.

/traditional medicine/ /medicinal plants/ /pharmacology/ /chemical analysis/

NATURAL PRODUCTS

Grantee F583: Dr Jayanthi Ramanathan, Department of Oral Surgery and Oral Pathology, University of Peradeniya, PERADENIYA, Sri Lanka

"A study on the carcinogenicity of betel quid ingredients in hamster cheek pouch mucosa"

IFS funding: 49000 SEK 1981

Betel chewing is a common habit in Sri Lanka and is also a part of the tradition and culture. Oral carcinoma is the commonest type of cancer in the country, and in almost all cases, the patients chewed betel quid. Dr Ramanathan will study the macroscopic and microscopic effects of betel quid ingredients in mixtures, as well as separately, on hamster cheek-pouch mucosa. If the carcinogenic activity is specifically related to one of the ingredients, recommendations to exclude this ingredient can be made, and thus decrease the occurrence of oral cancer.

/plant products/ /cancer/

Grantee F614: Dr Rapepun Wititsuwannakul, Department of Biochemistry, Faculty of Science, Prince of Songkla University, HAAD YAI, Thailand

"Rate-limiting enzyme in rubber biosynthesis and its application"

IFS funding: 57420 SEK 1982 80000 SEK 1983

Improved methods for breeding and selection of better-yielding rubber plants is important for rubber production in Thailand. At present the practice is to grow the plants and wait for at least six years until the tree can be tapped and the yield evaluated. There are reasons to believe that HMG CoA reductase is a rate-limiting enzyme in the biosynthesis of rubber. Dr Rapepun Wititsuwannakul will investigate this hypothesis with the ultimate goal of using the enzyme activity as an indicator of the rubber protion capacity of the plants. This test might then be applied to plant tissue cultures of rubber plants, thereby saving several years in the time needed for evaluation.

/plant breeding/ /chemistry/ /rubber industry/

NATURAL PRODUCTS

Grantee F615: Dr Betty Matsuhiro, Facultad de Ciencia, Universidad de Santiago, Casilla 5659, SANTIAGO 2, Chile

"Studies on agar from different nuclear phases of Gelidium species"

IFS funding: 40600 SEK 1982 64000 SEK 1983

Algae of the genera Gelidium produce agar (a polysaccharide) with high gel strength. Several species of Gelidium grow along the coastline of Chile. The harvested algae are exported as raw material for manufacturing phycocolloids, which are used in food processing and biomedical laboratories. Dr Matsuhiro will study variations in quality and quantity of the agar in relation to seasons and the nuclear phases of the plants. She will also try to improve the quality of agar by treatment with alkali.

/algae/ /chemistry/ /polymers/

Grantee F616: Dr Philippe Rasoanaivo, Laboratoire de Chimie Organique Structurale, Centre National de Recherches Pharmaceutiques, (CNRP), B P 702, ANTANANARIVO, Madagascar

"Isolation of the active substances from Lycopodium cernum"

IFS funding: 29000 SEK 1982

Asthma is a common disease in Madagascar. Traditional medicine makes use of several plants in the treatment of asthma, and among those is Lycopodium cernum. Dr Rasoanaivo will try to isolate the chemical substances which are effective in controlling the symptoms of asthma. The structure of the active compounds will be investigated.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /disease control/ /asthma/

NATURAL PRODUCTS

Grantee F617: Dr Rabodo Andriantsiferana, Département de Pharmacodynamie, Centre National de Recherches Pharmaceutiques, (CNRP), B P 702, ANTANANARIVO, Madagascar

"Studies on plants with reported antibiotic properties"

IFS funding: 29000 SEK 1982

In the traditional medicine of Madagascar there are several plants which are assumed to have anti-bacterial properties. Dr Andriantsiferana will take extracts from such plants and study their effects on the growth kinetics of bacteria. These experiments will be followed up with studies on experimentally-infected laboratory animals to get an *in vivo* assessment of the antibiotic effects.

/traditional medicine/ /medicinal plants/ /pharmacology/ /antibiotics/

Grantee F618: Ms Rosalinda Solevilla, Research Center, University of Santo Tomas, Espana St, MANILA, Philippines

"Research on the analgesic, anti-pyretic and/or anti-inflammatory activities of four Philippine medicinal plants"

IFS funding: 58000 SEK 1982

During a screening programme of 120 Philippine plants which are used against skin ailments, 6 plants were picked out for further investigation. Among these were *Ipomea muricata*, *Bidens pilosa*, *Calophyllum inophyllum* and *Tinosphora rumphii*, which will be studied by Ms Solevilla. She will test alcohol extracts from these plants for analgesic, anti-pyretic and anti-inflammatory activities in animal models. Attempts will be made to isolate the active constituents and to use them in clinical trials.

/traditional medicine/ /medicinal plants/ /pharmacology/ /skin/

NATURAL PRODUCTS

Grantee F653: Dr Manuel Moya Portuguez, Departamento de Quimica, Universidad Nacional, Apartado 86, HEREDIA, Costa Rica

"Phytochemical studies of genus Clusia in Costa Rica"

IFS funding: 75000 SEK 1982

Members of the genus Clusia, which are indigenous in Costa Rica, are used in traditional medicine to stimulate the cardio-vascular system. Dr Moya Portuguez will isolate and identify compounds with cardiotonic properties in the leaves and fruits of Clusia.

/traditional medicine/ /medicinal plants/ /chemical analysis/ /cardiovascular system/

Grantee F654: Dr Chachanat Thebtaranonth, Department of Chemistry, Faculty of Science, Mahidol University, Rama VI Road, BANGKOK 4, Thailand

"Chemical investigation of the genus Uvaria (Annonaceae sp.)"

IFS funding: 56250 SEK 1982

Several Uvaria spp. are indigenous to Thailand. Plants of this genus are known to possess cytotoxic (used in leukemia therapy) and anti-microbial properties. Dr Chachanat Thebtaranonth wants to investigate the chemical constituents of Uvaria spp., starting with U. purpurea and U. ferruginea. She will attempt to isolate the constituents responsible for the cytotoxic activity and elucidate their structures. It is expected that several active compounds will be identified. The results from the research may lead to a controlled use of the cytotoxic principles of Uvaria both in traditional and modern medicine.

/traditional medicine/ /medicinal plants/ /chemical analysis/

NATURAL PRODUCTS

Grantee F655: Dr Ghulam Jilani, Pest Management Research Centre, Pakistan Agricultural Research Council, Malir Halt, KARACHI 27, Pakistan

"Use of local plant materials for protection of stored food grains against insect pests"

IFS funding: 56250 SEK 1982

The grain storage conditions on farms in Pakistan are not satisfactory and result in extensive postharvest losses. Farmers in Pakistan have traditionally used a number of plants for the protection of their stored grains against insects. There have been no scientific studies on the potential of these plants. Dr Jilani will survey and collect plant materials reported to protect stored products from insects. The repellent/anti-feed/ insecticidal efficiency of these plants will be monitored and attempts will be made to isolate the plants' active compounds. Appropriate dosages and formulations will be worked out for optimum protection of food grains on farms.

/wild plants/ /chemical analysis/ /food storage/ /insecticides/

*** /postharvest losses/

Grantee F656: Dr Armando Batista, Escuela de Farmacia, Universidad de Panamá, Ciudad Universitaria "Octavio Méndez Pereira", Estafeta Universitaria, PANAMA, Panamá

"Investigation of two native species of Anacaldium as sources of inhibitors for bacterial dental plaque"

IFS funding: 52500 SEK 1982

Cashews are widely cultivated throughout Panama. This nut is used by inhabitants to treat throat infections. Dr Batista will isolate anacardic acid from cashews and synthesize some derivatives of the acid. The antimicrobial properties of the acid and its derivatives will be evaluated by in vitro tests.

/traditional medicine/ /cashew nuts/ /chemistry/ /disease control/

NATURAL PRODUCTS

Grantee F691: Dr Anthony Elujoba, Department of Pharmacognosy, University of Ife, ILE-IFE, Nigeria

"Cultivation of fenugreek seed and the isolation and quantification of its sterioidal sapogenins"

IFS funding: 7500 SEK 1983

Fenugreek, Trigonella foenumgraecum (Fabaceae sp.) is a legume traditionally grown in Mediterranean, Middle and Far Eastern countries. It is also used for flavouring purposes and its seeds have been shown to contain diosgenin which is used as a starting material for steroid production. Dr Elujoba intends to carry out a cultivation trial on fenugreek, which is not indigenous to Nigeria. At a later stage, he intends to analyze qualitatively and quantitatively the steroidal sapogenins produced by the plant under various cultivation conditions. The ultimate objective is to start diosgenin production in Nigeria.

/medicinal plants/ /cultivation systems/ /drugs/

Grantee F692: Dr Benjamin Noamesi, Department of Pharmacology, College of Medicine, University of Lagos, P M P 12003, LAGOS, Nigeria

"Pharmacological studies of the alkaloid crytolepine"

IFS funding: 52500 SEK 1983

Prof Dwuma-Badu (IFS grantee No F162, Ghana) has isolated the alkaloid cryptolepine from Cryptolepsis sanguinolenta. Preliminary investigations have shown this alkaloid to contain anti-inflammatory and anti-microbial activities. Dr Noamesi intends to study the prostaglandin antagonist properties of cryptolepine. He also wants to compare its effect with other known anti-inflammatory compounds and to study the results of combining it with these known compounds. Furthermore, he plans to study the effect of chemical modification of cryptolepine upon its pharmacological properties.

/medicinal plants/ /disease control/ /pharmacology/ /chemical analysis/

NATURAL PRODUCTS

Grantee F693: Dr Boukaré Zeba, Institut de Recherche sur les Substances Naturelles, B P 7192, OUAGADOUGOU, Upper Volta

"Studies on a rational adaptation of modern scientific techniques for prevention and therapy of some diseases in West Africa"

IFS funding: 60000 SEK 1983

Many plants in Upper Volta are commonly used in the therapy of a number of diseases by healers practicing traditional medicine. The dosage and mode of preparation of these traditional medicaments are not always properly designed to give optimal effects. Dr Zeba wants to study the use of Rauwolfia vomitoria, Vocanga africana, Holarrhena floribunda, Cassia abouata and Datura stramonium in traditional medicine. Based on the traditional use of these plants, he intends to formulate simple preparations with optimal positive effects and to find out appropriate dosages for these preparations.

/medicinal plants/ /drugs/ /disease control/

Grantee F694: Dr Dismas Otieno, The International Center of Insect Physiology and Ecology, (ICIPE), P O Box 30722, NAIROBI, Kenya

"Bioactive constituents of Kedrostis foetidissima and Dolichos maitlandii"

IFS funding: 66000 SEK 1983

Kedrostis foetidissima (Cucurbitaceae sp.) and Dolichos maitlandii (Papilionaceae sp.) are plants traditionally used for treating certain bacterial and fungal infections in children. In addition to anti-bacterial and anti-fungal activities, extracts from the two plants have been shown to contain insect larval growth inhibitory activity. Dr Otieno intends to identify the bioactive constituents of the plants and to study their suitability for use against insect pests and disease vectors, fungi, protozoa and bacteria.

/medicinal plants/ /disease control/

NATURAL PRODUCTS

Grantee F741: Dr Eduardo Soler, Dexin Ltda., Las Heras 1790, MONTEVIDEO, Uruguay

"Essential oils from Uruguyan native plants"

IFS funding: 32000 SEK 1983

There are a number of indigenous Uruguyan plants from which essential oils can be isolated. Dr Soler intends to extract and identify the essential oils from local Lippia species and from Elvonurus rostratus. The oils will be extracted from various parts of the plants and the idenfication will be done with various sophisticated chromatographical methods as well as with infra-red spectrophotometry. The results can provide a basis for industrial production of locally-available essential oils.

/essential oils/ /chemical analysis/

Grantee F742: Dr José Lopez V, Centro de Investigaciones en Productos Naturales, Universidad de Costa Rica, Ciudad Universitaria, SAN JOSE, Costa Rica

"Phytochemical studies on medicinal plants from Costa Rica with potential anti-parasite properties"

IFS funding: 64000 SEK 1983

In Costa Rica, as in most tropical countries, the frequency of gastro-intestinal diseases caused by parasites is high. These diseases particularly affect children. Dr Lopez V will study plants which are used in traditional medicine for parasitic diseases. Extracts will be tested for anti-amoebic properties with in vitro tests. The active principles will be isolated by chromatographic fractionation and identified by physico-chemical and spectroscopic methods.

/medicinal plants/ /parasitic diseases/

NATURAL PRODUCTS

Grantee F743: Mr Samuel Fon Kimbu, Department of Organic Chemistry, Faculty of Science, University of Yaounde, P O Box 812, YAOUNDE, United Republic of Cameroon

"Chemical studies and Anonidium manni and Garcinia spp, two medicinal plants used in Cameroon"

IFS funding: 76000 SEK 1983

Anonidium manni is used in Cameroon as a vasodilator, muscle relaxer and sedative. Plants of the genus Garcinia are traditionally used for convulsions and as an antidote for poisoning. Mr Fon Kimbu will extract powders from dried seeds, bark, stems, roots and leaves of these plants and screen the extracts pharmacologically. The active extracts will be fractioned by chromatographic techniques and the structure of the isolated active components will be elucidated by spectroscopic methods.

/medicinal plants/ /chemical analysis/

Grantee F744: Dr Patoomratana Tuchinda, Department of Chemistry, Faculty of Science, Mahidol University, Rama VI Road, BANGKOK 4, Thailand

"Diosgenin from plants of the Zingiberaceae family"

IFS funding: 80000 SEK 1983

Costus spp. can be found in all parts of Thailand. A preliminary survey of a few of these species has revealed that they contain large amounts of diosgenin. Dr Patoomratana Tuchinda wants to carry out an extensive phytochemical survey of all the Costus spp. in Thailand to determine their diosgenin contents and to find clones which give high yields of diosgenin. Attempts will be made to cultivate such clones for industrial purposes.

/medicinal plants/ /cultivation systems/ /drugs/

NATURAL PRODUCTS

Grantee F745: Dr Syed Rizvi, Department of Botany and Plant Pathology, Rajendra Agricultural University, PUSA 848125, Samastipur, India

"Use of allelochemicals as natural herbicides"

IFS funding: 61600 SEK 1983

Synthetic herbicides have been shown to cause a range of undesirable side effects to crops and their consumers due to their toxic and non-biodegradable nature, while allelopathic plants produce chemicals, i.e., allelochemicals that can selectively regulate the growth of some other plants. These chemicals may be exploited as selective herbicides. Dr Rizvi will assay the allelochemicals for their herbicidal action and their mode of action will be studied. The objective of research is to find new natural herbicides which would be less expensive and less hazardous.

/biological control/ /herbicides/

Grantee F746: Dr Sadiga Firdous, H E J Research Institute of Chemistry, University of Karachi, KARACHI 32, Pakistan

"Isolation, structural elucidation and pharmacological studies of the chemical constituents of *Buxus papilosa*"

IFS funding: 40000 SEK 1983

Buxus papilosa grows abundantly in Pakistan. Extracts of this plant have traditionally been used in the treatment of malaria, various skin diseases, tuberculosis and certain forms of cancer. Dr Firdous will prepare crude extracts from *Buxus papilosa* with various solvents. The extracts will be subjected to chromatographic fractionation and the fractions, as well as the crude extracts, will be subjected to a range of pharmacological tests *in vivo* and *in vitro*. The active components will be isolated and their structures elucidated.

/medicinal plants/ /disease control/

NATURAL PRODUCTS

Grantee F747: Dr Luz Joly, Vicerrectoria de Investigaciones y Postgrado, Universidad de Panamá, Ciudad Universitaria "Octavio Méndez Pereira", Estafeta Universitaria, PANAMA, Panamá

"Ethnobotany of Guaymi Indians"

IFS funding: 44000 SEK 1983

The Guaymi Indians in the Western part of Panamá traditionally use plants for nutritional, medicinal and ceremonial purposes. Although the ethnobotany of other Indian groups in Panamá have been studied, little is known about the Guaymi practices in this respect. Dr Joly will document the ethnobotanical role of plants used by the Guaymi Indians. The plants will be taxonomically identified and the medicinal uses will be evaluated.

/medicinal plants/ /ethnography/

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