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**PREGNANCY AND LACTOSE INTOLERANCE**

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9. ABSTRACT  
 Of the 32 Negro women studied, 21 (66%) evidenced lactose malabsorption by an inadequate blood sugar rise. Of these 21 Negro women, 17 had symptoms with the test and were considered lactose intolerant. Of the 32 white women, only 3 (9%) evidenced lactose malabsorption, with 2 of the 3 women exhibiting symptoms and who were considered intolerant. Eight of the Negro and ten of the white women having a normal lactose tolerance curve had symptoms with the test (Table 2). The mean maximum blood sugar rise over fasting levels in the 21 Negroes with a flat curve was 11 mg/100 ml as compared with 40 mg/100 ml in the 11 Negroes with a normal curve. The mean maximum blood sugar rise in the three white women with a flat curve was 21 mg/100 ml as compared with 53 mg/100 ml in the 29 normal subjects (Table 3).

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# Pregnancy and lactose intolerance<sup>1,2</sup>

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Milk consumption is encouraged for pregnant and lactating women. Four glasses of milk are considered basic to the diet of these women (1, 2). This quantity of milk, if consumed, would account for approximately 27% of calories, 42% of protein, 16% of carbohydrates, and 89% of calcium (3). Despite recent reports (4-6) concerning low lactase levels in major population groups, little attention has been given to the prevalence of this problem in pregnant women. In this communication, we will report on the results of lactose tolerance tests in Negro and white pregnant women and the symptoms associated with the ingestion of a lactose load.

## Methodology

### Population

Thirty-two white and thirty-two Negro pregnant women with a mean age of 20.3 years and in good health were randomly selected from the registrants of the Baltimore City Hospitals' prenatal clinic. All women were drawn from the lowest socioeconomic decedile census tracts. Excluded from the study population were women with: eclampsia, pre-eclampsia, anemia, and diabetes mellitus.

The subjects were near medical indigence and had limited education, with less than 38% of the subjects finishing the 12th grade. Almost one-half the women were primiparas with 75% registering for their initial visit to the prenatal clinic during the 2nd or 3rd trimester. Informed consent was obtained from all women participating in the study (Table 1).

### Lactose tolerance tests

Lactose tolerance tests were carried out in the morning after an overnight fast. A lactose load of 50 g/m<sup>2</sup> of body surface as a 20% suspension in water was given. A 0.2-ml microcapillary blood sample was obtained at 0, 15, 30, 60, 90, and 120

min. True glucose (hereafter called blood sugar) was determined by the orthotoluidine method (7). A blood sugar rise of less than 26 mg/100 ml was considered a flat lactose tolerance curve (8). Glucose and galactose tolerance tests are not necessary to prove lactose malabsorption in a healthy population (6).

Symptoms provoked during the test by the ingestion of lactose, such as abdominal discomfort, cramps, flatulence, bloating, loose stools, and diarrhea were noted and recorded by trained observers. Symptoms occurring during the 24 hr following the test were noted and recorded by the subjects. They were instructed to distinguish these symptoms from the possible discomforts of pregnancy.

A blood sugar rise below 26 mg/100 ml coupled with symptoms was used to define a lactose intolerant subject (8, 9). These two events occurring together accurately reflect a lactase level below 1 to 2 units/g wet wt mucosa. A blood sugar rise below 26 mg/100 ml without symptoms is considered lactose malabsorption (6, 8, 9).

## Results

Of the 32 Negro women studied, 21 (66%) evidenced lactose malabsorption by an inadequate blood sugar rise. Of these 21 Negro women, 17 had symptoms with the test and were considered lactose intolerant. Of the 32 white women, only 3 (9%) evidenced lactose malabsorption, with 2 of the 3 women ex-

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**TABLE 1**  
Population studied

Group	No.	Mean age		No. completing 12th grade	Mean parity	Trimester tested	
		Years	Months			2nd	3rd
Negro							
Lactose absorbers	11	20	2	7	0.9	3	8
Lactose malabsorbers	21	22		9	1.3	5	16
White							
Lactose absorbers	29	21	8	6	1.3	8	21
Lactose malabsorbers	3	19	4	2	0.0	2	1
<b>Total</b>	<b>64</b>	<b>21</b>	<b>5</b>	<b>24</b>	<b>1.2</b>	<b>18</b>	<b>46</b>

hibiting symptoms and who were considered intolerant. Eight of the Negro and ten of the white women having a normal lactose tolerance curve had symptoms with the test (Table 2).

The mean maximum blood sugar rise over fasting levels in the 21 Negroes with a flat curve was 11 mg/100 ml as compared with 40 mg/100 ml in the 11 Negroes with a normal curve. The mean maximum blood sugar rise in the three white women with a flat curve was 21 mg/100 ml as compared with 53 mg/100 ml in the 29 normal subjects (Table 3).

**Discussion**

Pregnancy does not appear to alter an individual's ability to tolerate a lactose load. Negro pregnant women exhibit patterns of lactose intolerance similar to those in non-pregnant Negro populations studied (5, 9). Whereas test results are based on a lactose loading dose, interference with the ability to handle more commonly consumed levels of lactose has been reported (10). This results in carbohydrate loss, as well as interference with other nutrients consumed (11). The potential for a negative dietary effect with the consumption of milk in a lactose-intolerant woman may exist and should be explored.

Lactose intolerance in Negroes as well as in whites is of importance because pregnant women are frequently the target for nutrition education. If current dietary practices were to remain unchanged, the lactose-intolerant woman would be counseled to consume milk

**TABLE 2**  
Results of lactose tolerance tests and associated symptoms

	Negro	White	Negro	White
	<26 mg/100 ml		≥26 mg/100 ml	
Symptoms	17	2	8	10
No symptoms	4	1	3	19
<b>Total</b>	<b>21</b>	<b>3</b>	<b>11</b>	<b>29</b>

**TABLE 3**  
Mean blood sugar rises, milligrams per 100 ml, grouped by lactose absorption and race

	Mean	SD
Negro		
Lactose malabsorbers (21)	11.4	±5.1
Lactose absorbers (11)	40.3	±8.4
White		
Lactose malabsorbers (3)	21.1	±4.6
Lactose absorbers (29)	52.8	±13.6

as the keystone to her diet. Were significant numbers of women to reject this advice and not consume milk because of intolerance, then this must be recognized in nutrition counseling during pregnancy. If there remains an equally significant number of lactose-intolerant women who accept the professionals' advice and do consume milk, they may not be realizing the full nutritional advantages anticipated by the health professional. Additional information on milk consumption patterns in pregnant women with low lactase levels is needed.

Although it is suggested that in lactose-intolerant groups there may be value in not prematurely withdrawing milk from the diet of children, it is clear that by early adult life, low lactase levels are the norm in the majority of those populations unable to tolerate a lactose load. This distinction is important in considering a logical approach to dietary counseling. 

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