

# Effect Of Carbohydrate Rich Diet On The Lactic Acid Concentration In Human Vaginal Secretion.

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**Summary:** 123 Females of different age groups living on different quantity of carbohydrate rich diet were engaged in this investigation. The vaginal secretion of all females was collected for lactic acid estimation. In all age groups the lactic acid concentration was found to be more than control. The result indicates that carbohydrate rich diet may effect the body physiology including reproductive organs.

## Introduction

The vaginal secretion helps in easy copulation as well as creates a favourable environment for sperms after ejaculation. As per report of Menge and Kronig, (1987) the glycogen in the vaginal epithelial cells was being utilized by the vaginal bacillus for the production of lactic acid. Rakoff et. al., (1944) have reported the presence of the greatest amount of glycogen in the upper vaginal wall.

Taylor et. al., (1983) have reported the role of low/free carbohydrate diet in case of rats. Different studies have reported about the effects of high sugar diets (Gibson, 1993) and nutrition-poor diets (Kant and Schatzkin, 1994).

Among different biochemicals of vaginal secretion, the lactic acid has major contribution in reproductive physiology. The concentration of lactic acid is supposed to be the principal cause of vaginal acidity (Masters and Johnson, 1966), which appears to coincide with the change in estrogen/progesterone level. Acidity is detrimental to the spermatozoa during their sojourn in vagina deposited at the end of copulation, (Hawk, 1975 ; Wallace-Haagens, et. al., 1975; Mayer et. al., 1970; Kremmer 1968).

The present work was designed to know the effect of carbohydrate rich diet on the concentration of lactic acid in vaginal secretion of women under different age groups on the basis of their reproductive status.

## Material And Methods

One hundred twenty three (123) normal, healthy women of four different age groups were associated in this investigation. With the purpose of investigation females of all age group were divided into two groups - i.e. control and experimental. Some of the experimental females were in-

gesting foods in good quantity and hence their eating behaviour was unrestrained, whereas some of the females were conscious of their food ingestion and were taking restrained diet (less in quantity). The experimental period was of two to three years.

The vaginal secretion was collected by the insertion of vaginal tampon inside the vagina. After removal of the tampon from the vagina it was kept in separate vials containing 2 ml. glass distilled water. The secretion containing tampons were squeezed repeatedly for the proper extraction and each vials were then centrifuged at 3000 r.p.m. for 10 minutes to separate tissues debris, if any.

The supernatant was utilized for the estimation of lactic acid by the method of Barker and Summerson (1941). Result was calculated as mean value  $\pm$  standard error. Significance value was calculated on student t-test.

## Result

As per results shown in table-I the concentration of lactic acid in vaginal secretion of women of age group 11-17 years with restrained diet increases non-significantly, whereas in case of unrestrained conditions the increase is highly significant ( $P > 0.001$ ) in comparison to control. In case of 18-25, 26-35 and 36-55 years age groups the concentration of lactic acid in restrained and unrestrained condition both increases highly significantly ( $P > 0.001$ ) in comparison to control.

Simultaneously in 11-17 and 26-35 years age groups the lactic acid concentration increase in non-significant in unrestrained diet in comparison to restrained diet whereas in 18-25 and 40-55 years age groups the increase in lactic acid concentration in unrestrained diet is highly significant ( $P > 0.001$ ) in comparison to restrained diet.

Table - I

## Effect of Carbohydrate Rich Diet on the Lactic Acid of Human Vaginal Secretion

Age group (in years)	Duration of experimen- tation (in years)	Quality of diet	Quantity of diet	Concentration of lactic acid (mg/100ml.) Mean $\pm$ S.E.
11-17	2-3	Cont.	Cont.	2.580 $\pm$ 0.25 (9)NS
"	"	Carb. rich	R	2.628 $\pm$ 0.7 NS (12) <sup>+++</sup>
"	"	"	UR	3.425 $\pm$ 0.09 (12)
18-25	"	Cont.	Cont.	3.235 $\pm$ 0.16 (10) <sup>+++</sup>
"	"	Carb. rich	R	4.429 $\pm$ 0.10 xxx (12) <sup>+++</sup>
"	"	"	UR	5.407 $\pm$ 0.10 (10)
26-35	"	Cont.	Cont.	4.445 $\pm$ 0.07 (9) <sup>+++</sup>
"	"	Carb. Rich	R	5.407 $\pm$ 0.29 NS (11) <sup>+++</sup>
"	"	"	UR	5.574 $\pm$ 0.10 (9)
36-55	"	Cont.	Cont.	4.620 $\pm$ 0.11 (9) <sup>+++</sup>
"	"	Carb. rich	R	5.395 $\pm$ 0.09 xxx (9) <sup>+++</sup>
"	"	"	UR	6.389 $\pm$ 0.10 (11)

Number in parenthesis indicates number of samples.

P value: NS	=	Non significant.
+++ (P>0.001)	=	Highly significant.
xxx (P>0.001)	=	Highly significant.
Cont.	=	Control.
Carb. rich	=	Carbohydrate rich.
R	=	Restrained.
UR	=	Unrestrained.

## Discussion

As per result in every age group the increased lactic acid level in case of unrestrained carbohydrate rich diet clearly indicates that higher level might have been due to ingestion of higher level of carbohydrate. Because Gross, (1961) and Wylie and Handerson, (1969) have also reported that

action of lactobacilli on vaginal glycogen and / or simpler carbohydrates such as glucose found in vagina is thought to be more or less responsible for the production of lactic acid. Not only this, the diet with low or high carbohydrates have a major influence on glucose-insulin metabolism and in part on other metabolic and hormonal functions (Theresa et. al., 1996) also.

In present work it can be assumed that the low/high car-

bohydrate rich diet might have affected the physiology of the total body including the reproductive organs. Because the physiological events are interrelated with each other. The disturbance in any one may affect the other. Higher concentration of lactic acid in vaginal secretion may be a factor of infertility (Roy et. al., 1996) because higher vaginal acidity is not suitable for survival of the spermatozoa.

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