

EFFECT OF VARIOUS FOODS AND CLEANSING AGENTS ON THE ELIMINATION OF ARTIFICIALLY INOCULATED YEAST FROM THE MOUTH

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INTRODUCTION

HIRSCHFELD (1939) stated that the chief requirements for maximum oral hygiene are a satisfactory toothbrush and an effective method of brushing. The experiments of Howitt, Fleming and Simonton (1928) suggested a greater relative effectiveness of the toothbrush over "presumptively" detergent diets. Wallace (1929), on the other hand, placed more emphasis on the action of detergent foods and the cleansing effect of saliva, but did agree that intelligent use of the toothbrush was helpful.

Both Hirschfeld (1939) and Wallace (1929) stressed the advantages of substituting detergent fruits and vegetables for carbohydrate rich foods which tend to be impacted or retained on different areas of the teeth. Wallace (1929) further stated that if a food which may otherwise be destructive is followed by a sufficient amount of a cleansing food, there are no harmful results.

Observations of Fancher and Fosdick (1941) indicated that, in many cases, lactic acid is formed in isolated spots with extreme rapidity after ingestion of sugars. Teuscher (1937) found that the rate at which sugar disappeared from

saliva was lower in persons more susceptible to caries. Thus, it seems desirable to have information regarding both the speed and the effectiveness of natural and artificial means of cleansing the mouth.

Many reports relative to oral hygiene are based on disappearance of bacteria from the mouth. It has been shown that massive amounts of artificially inoculated bacteria may disappear from the mouth in from one to four hours. (Hood and Arnold [1937]; Bloomfield [1922].)

Bloomfield (1922) concluded that there is a definite mechanism whereby foreign organisms entering the mouth are removed. The essential feature of the mechanism was a rapid and direct conveyance of the bacteria toward the throat. Bloomfield (1922) also reported that organisms once anchored on mucous membrane were no longer easily dislodged by flushing with fluids.

Appleton, Klein and Palmer (1938) found that while artificially inoculated bacteria (*Serratia marcescens*) were always eliminated from the mouth, the time required for elimination was greater when large amounts were inoculated. Additional interesting observations of Appleton (1940) are:

1. Experiments with pilocarpine and paraffin indicated that an increased salivary flow and the mechanical effects of chewing paraffin markedly accelerated the elimination of artificially inoculated bacteria.

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2. The chewing of food, with the accompanying increase in salivary flow, and the mechanical effects of friction and swallowing resulted in the removal of large numbers of bacteria from the mouth.

The decrease in the normal flora following various cleansing methods is

OUTLINE OF EXPERIMENTAL METHOD EMPLOYED

It was the aim of these experiments to compare the effectiveness of several foods and artificial cleansing agents as aids to the natural cleansing mechanism of the mouth.

Any satisfactory experimental method

TABLE 1.—ORAL HEALTH DATA

Subject	Missing Teeth	Bridges		Cavities	Condition of Gingivae
		Fixed	Removable		
E.P.	1: $\frac{1}{7 }$			3 small	Moderate amount of calculus
H.J.	6: $\frac{3-5}{7-6 6-7}$	1: $\frac{3-4}{ }$		4 small 2 small	Marked inflammation
H.K.	7: $\frac{8-5-1 6}{5 1-6}$	2: $\frac{1 1}{1 1-2}$		3 small	Marked general recession
L.K.	7: $\frac{8 8}{6 5-6-7-8}$			—	Good
J.O.	6: $\frac{6-4-5 7-8}{ 7}$	1: $\frac{6-5-4 7}{ }$		—	Good
E.L.	9: $\frac{8-6 6-8}{6-5 5-6-8}$	—		—	Good
A.H.	6: $\frac{8 8}{7-6 5-6}$	—	—	3 small	Marked gingivitis
G.D.	9: $\frac{8 4-5-8}{8-6-5-4 8}$	1: $\frac{6-5-4 }{ }$	1: $\frac{4-5}{ }$	—	Good
G.V.	4: $\frac{8 8}{8 8}$	—	—	1 small	Good
P.R.	7: $\frac{7 6-8}{6 4-5-6}$	—	2: $\frac{6}{ 4-5-6}$	—	Good

temporary. Florestano, Elliott and Faber (1941) for instance, reported a 46 to 89 per cent reduction of oral organisms following prophylaxis with water, citrus fruits and detergent tooth pastes, with a distinct rise above normal in all cases two hours later. It was interesting to note that the rise following the use of orange juice was less pronounced.

for such an evaluation should take into consideration and allow for the free interplay of biologic and physiologic factors. It is then evident that, in experiments of this type dealing with the mouth, one may expect many difficulties. The development of the method finally used was the result of many preliminary experiments.

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