life, the only good chance for determining any difference in migratory behavior seemed to be to trap the fish when descending as smolts the next spring. Only one trap was feasible, and this was placed on the lower Rawdon River near the lower limit of planting. If neither kind migrates seaward through Grand Lake, a trap at its outlet will get no smolts—a fact which might be interpreted as failure of any "sea" salmon to survive. If "lake" smolts, in descending, stop in the first lake they reach, but "sea" smolts continue seaward, a trap in the lower Rawdon will take "lake" smolts only from lower Rawdon but upper Rawdon and Beaver as well as lower Rawdon "sea" smolts. With such a difference in migratory behavior, it was expected that more "sea" than "lake" smolts would be trapped.

D. I. Rice, of Dalhousie University, Halifax, constructed the trap and operated it from May 26 to July 31, 1946. No salmon descended after June 12 by which time 105 native, 2 "lake," and 2 "sea" smolts had entered the trap. There was, therefore, failure to find any difference in migratory behavior. Further experiments are desirable to discover possible hereditary differences in migratory behavior of supposed "races" or "strains" in salmonid species.

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Role of Glucose in Promoting Growth of *Lactobacilli* in Saliva

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It has been shown that an oral strain of *Lactobacillus* grows and produces acid to a maximal extent when incubated on a synthetic medium consisting of d-glucose, tryptophane, sodium acetate, potassium phosphates, thiamine hydrochloride, calcium pantothenate, nicotinic acid, and casein hydrolyzate (vitamin free) (*4*). In a subsequent report (*2*) it was shown that whole saliva could substitute only partially for the three water-soluble vitamins, but completely substituted for the mineral salt fraction of the synthetic media. However, the whole saliva did not serve as a substitute for either casein hydrolyzate or tryptophane. In a later paper (*3*) saliva hydrolyzed by acid or alkali was found capable of substituting for casein hydrolyzate in the synthetic media. It was also found that it was unnecessary to add l-tryptophane to the media when an alkali hydrolyzate of saliva was substituted. These observations suggested saliva as a potential source of the amino acids found essential for the growth of an oral strain of *Lactobacillus*.

The present report is concerned with (a) observations on some chemical changes occurring in saliva incubated with glucose at body temperature, and (b) the use of an incubated saliva-glucose mixture as a substitute for tryptophane and for casein hydrolyzate in a synthetic medium. For these purposes whole saliva, collected from individuals, was incubated at 37.5°C. with and without glucose. To estimate the proteolysis occurring in incubating saliva the "carboxyl CO_2"[1] changes were determined. The ammonia (plus urea) nitrogen changes were also measured as an index of deamination.

As a result of the addition of glucose to incubating saliva there was an increase of approximately 100 per cent in the "carboxyl CO_2" liberated during the incubation. Also, markedly less ammonia was formed in the saliva incubated with glucose. These results are interpreted as evidence that the presence of glucose in saliva favors proteolysis over deamination. Table 1 illustrates the findings in a typical experiment. Further observations have been made regarding the ability of saliva, given preliminary incubation in the presence of glucose, to substitute for tryptophane and to a lesser extent for the casein hydrolyzate in synthetic media. Typical findings are shown in Table 2.

TABLE 1

CHANGES IN "CARBOXYL CO_2" AND IN AMMONIA (PLUS UREA) NITROGEN OF INCUBATING SALIVA WITH AND WITHOUT ADDED GLUCOSE

Period of incubation (hrs.)	"Carboxyl CO_2" present (mg. %)	Ammonia (plus urea) nitrogen (mg. %)	pH
No glucose present			
0	1.52	20.9	8.25
120	0.42	45.9	7.47
1% glucose added			
0	1.52	20.9	8.25
120	4.07	22.6	3.68

TABLE 2

ACID PRODUCED IN BASIC MEDIUM IN WHICH SALIVA INCUBATED FOR 192 HOURS WAS SUBSTITUTED FOR CERTAIN ESSENTIAL GROWTH FACTORS

Replacement	Essential substance omitted from media	Acid produced (ml.)
Saliva incubated without glucose	Casein hydrolyzate	0.06
Saliva incubated with glucose	Casein hydrolyzate	1.05
Saliva incubated without glucose	Tryptophane	0.18
Saliva incubated with glucose	Tryptophane	5.00

These chemical findings suggest an additional role for glucose in the physiology of the oral cavity. In contact with saliva at body temperature, glucose assists in the liberation of amino acids which can be utilized as nutrients for the growth of oral *Lactobacilli*. The data obtained in this investigation will be published in detail at a later date.

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[1] Terminology of Van Slyke, Dillon, MacFadyen, and Hamilton (*1*).