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John H. Watkins
Iowa State College

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BACTERIAL DECOMPOSITION OF SUGARS AND
ACIDS ON A TRICKLING FILTER

JOHN H. WATKINS

(*ABSTRACT*)

Organisms were isolated from activated sludge and a sprinkling filter utilized for creamy waste purification. Their ability to utilize sugar without acid production and to decompose lactic acid was studied. When inoculated into a medium consisting of 0.1% glucose, 0.075% $(\text{NH}_4)_2\text{HPO}_4$, and 0.02% KCl, adjusted to pH 6.4, growth without acid production occurred in eleven out of the thirty-nine organisms studied. With a similar medium, using lactose instead of glucose, growth with an absence of acid appeared in seventeen of thirty-nine organisms. Growth in most cases was slight, and but little of the sugar was decomposed, as determined by Fehling's solution.

In another series, lactic acid was employed as the sole source of carbon in place of the carbohydrate in the above medium. Decomposition was determined by observation of growth and by determination of the change in the reaction (pH). Sixty percent of the organisms grew in this medium, and in no instance was there an increase in acidity. The initial pH of the medium was 5.8, which changed to from 6.3 to 7.9 after one week's incubation. It thus seems probable that sugar is decomposed in a sprinkling filter with acid production and with subsequent decomposition of the acid into neutral or alkaline products.

Agar plate counts of the effluents from various heights (1-6 ft.) of the filter which were made upon the above described lactic acid medium showed a decrease in bacteria from 500,000 to 60,000 per cc, and an increase in molds from 0 to 1800 per cc. The majority of the bacterial cultures isolated from the sprinkling filter by means of the medium are gram negative rods, and give strong evidence of belonging to the colon-aerogenes, and fluorescent groups of bacteria.

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