
In thiosulphate-limited continuous cultures of a newly isolated obligately chemolithotrophic spirillum (Kuenen, J. G. & Veldkamp, H. (1970), *Antoni van Leeuwenhoek* 36, 186), the effect of organic compounds added to the autotrophic medium containing minerals + thiosulphate was investigated. Acetate (1 mm) caused an increase in dry weight and cellular protein of 15 % and 12 %, respectively. For *T. thioparus* these figures were 14 % and 17 %, respectively.

Succinate (1 mm) increased the cell yield by 15 %; 1 mm acetate plus 1 mm succinate had a combined effect and caused a 24 % increase in dry weight and 27 % increase in protein in the spirillum, and 22 % resp. 40 % in *T. thioparus*.

Glutamate, aspartate, casamino acids, glycine, but not glucose, fructose, glycerol, glycercate, lactate, pyruvate, malate or ribose caused similar effects.

Although these quantitative effects of organic compounds on cell yields and protein content could be established, no differences could be measured between the levels of carboxydismutase activity in cell-free extracts obtained from chemostat cultures grown autotrophically or in the presence of organic compounds.

Demethylation of Trimethylamine N-oxide by *Pseudomonas aminovorans*. By P. J. Large (University of Hull, Hull, Great Britain)

*Pseudomonas aminovorans* NCIB9030, first isolated by den Dooren de Jong, L. E. (1927), *Zentralblatt für Bakteriologie*, Abt. II, 71, 193, will grow on a number of methyl amines, including trimethylamine N-oxide, as sole carbon source. It is one of a limited group of organisms able to grow on C₁ compounds as sole carbon source (Quayle, J. R. (1963), *Journal of General Microbiology* 32, 163). The problem of growth on C₁ compounds and its relevance to autotrophy has been discussed (Quayle, J. R. (1961), *Annual Review of Microbiology* 15, 119). *Pseudomonas aminovorans* grown on trimethylamine N-oxide oxidizes methylamine, dimethylamine, trimethylamine N-oxide and formate without a lag. Extracts contain an enzyme which catalyses the non-oxidative, non-hydrolytic conversion of trimethylamine N-oxide into dimethylamine and formaldehyde. The unstable enzyme has been purified about fivefold.

The partially purified preparation can be freed from dimethylamine oxidase activity (Eady, R. R. & Large, P. J. (1969), *Biochemical Journal* 111, 379) by ageing, since the latter enzyme is less stable. Unlike the dimethylamine oxidase, the demethylase activity is not inhibited by carbon monoxide or thiols compounds, although cyanide is a potent inhibitor. A similar enzyme has recently been described in *Bacillus* *r* (Myers, P. A. & Zatman, L. J. (1971), *Biochemical Journal* 121, 109), although the *Pseudomonas aminovorans* enzyme differs in many respects – for example, its pH optimum is 6-0 compared with 7-5 and the response to inhibitors is different. The enzyme is also present in *Pseudomonas aminovorans* grown on methylamine, dimethylamine or trimethylamine.

When succinate-grown bacteria were transferred to methylamine growth medium there was a tenfold increase in specific activity in the lag period of 24 h. before growth on methylamine began. We suggest that the enzyme plays an important role in growth on trimethylamine N-oxide and trimethylamine, although its presence in bacteria grown on dimethylamine and methylamine is difficult to explain.