Further evidence for aerobic denitrification by *Thiosphaera pantotropha*

L. A. Robertson and J. G. Kuenen

*Laboratory of Microbiology, Delft University of Technology, Julianalaan 67 A, 2628 BC Delft, The Netherlands*

Growth and respiration studies involving denitrification inhibitors have provided further evidence that *Thiosphaera pantotropha* denitrifies aerobically. The reduction in total oxygen uptake caused by nitrate is nullified by agents such as antimycin a. Furthermore, N₂O accumulates in aerobic cultures with acetylene. Aerobic denitrification has also been observed in the chemostat. Interpretation of the results has been complicated by this organism’s ability to nitrify heterotrophically.

*Hyphomicrobium* EG, a dimethyl sulphide-utilizing methylotroph

G. M. H. Scheuderman-Suylen and J. G. Kuenen

*Laboratory of Microbiology, Delft University of Technology, Julianalaan 67 A, 2628 BC Delft, The Netherlands*

Chemostat enrichments on dimethyl sulphoxide have yielded a *Hyphomicrobium* species able to grow on dimethyl sulphide. This is metabolized via methyl mercaptan, and thence to formaldehyde and sulphide, the latter being oxidised to sulphate.

*Hyphomicrobium* EG can also grow on methylated amines and formate but not on methanol. Preliminary results indicate that it can derive energy from reduced sulphur compounds.

Isolation of mitochondria from *Saccharomyces cerevisiae* and *Candida utilis* and comparison of their respiratory activities in relation to the Crabtree effect

H. van Urk, P. M. Bruinenberg, J. P. van Dijken and W. A. Scheffers

*Laboratory of Microbiology, Delft University of Technology, Julianalaan 67 A, 2628 BC Delft, The Netherlands*

Yeasts exhibiting a Crabtree effect ferment excess glucose to ethanol even in the presence of oxygen. Such yeasts only display full respiration when grown under glucose limitation. Thus, when *Saccharomyces cerevisiae* CBS 8066 was grown aerobically in glucose-limited chemostat culture, alcoholic fermentation was absent at dilution rates below 0.3 h⁻¹. Nevertheless, upon addition of a glucose pulse, most of the sugar was converted to ethanol and only a minor fraction was incorporated into biomass. Under similar conditions Crabtree-negative yeasts, such as *Candida utilis* CBS 621, fully respired the added glucose with concomitant production of biomass.

The mechanism responsible for the aerobic alcoholic fermentation in Crabtree-positive yeasts is still obscure. In order to investigate whether a limited capacity of their respiratory chain contributes to the tendency to perform alcoholic fermentation, we compared the respiratory capacities of mitochondria from *S. cerevisiae* and *C. utilis*. Active, intact mitochondria were prepared according to Bruinenberg et al. (1985 a, b).