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SECTION B

PROTEIN ENHANCEMENT OF FOODS

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Production of protein enriched, palatable and stable foods by solid substrate fermentations has been carried out by man since historic times. Yet, the interest in food fermentations continues unabated. The focus now is on developing large scale production technologies for many of the traditional foods through better understanding and control of fermentation processes, on utilizing the well established food-grade microorganisms in fermenting edible substrates not previously employed and, to a lesser extent, on finding new, safe, microorganisms for protein enrichment of lower grade substrates. This, latter approach has led to a totally new, highly successful (McNaughton, 1989), mycoprotein food, "Quorn," which, in spite of utilizing a liquid substrate, serves as a shinning example for solid substrate fermentations to emulate.

This section contains three papers on protein enriched foods. Moo-Young *et al.* describe a process for upgrading lignocellulosic matter from edible plant residues using an edible microfungus traditionally employed in *ontjom* solid-state fermentations of Indonesia. A solid substrate slurry fermentation system is employed for the new process. Scale-up of the process, the novel bioreactor technology used and the process economics are described. In the second paper, Bisping *et al.* examine the traditional *tempe* (or *tempeh*) fermentation with regard to formation of γ-linolenic acid, proteases and vitamins. Finally, Yang details protein enrichment of sweet potato residue using amylolytic fungi.

A more comprehensive overview of the microbial biomass protein (MBP) technology, economics and product safety for human food and animal feed applications is presented elsewhere (Moo-Young and Gregory, 1986).

References

McNaughton, K. J. (1989). "Twenty years of single cell protein ventures." *The Chemical Engineer*, **466**, 44-48.

Moo-Young, M. and Gregory, K. F., editors (1986). *Microbial Biomass Proteins*, Elsevier Applied Science, London, 185 pp.