TECHNIQUES IN PLANT CELL AND DISPERSION CULTURE

T.D.Turner, F.P.S., M.H.Williams, Welsh School of Pharmacy, UWIST, King Edward VII Avenue, Cardiff, CF1 3NU.

The potential for bioproduction of important medicinal constituents in plant cell cultures was recognised in the early 1950's. Examination of the biochemistry of the dedifferentiated cells, use of precursors and modified physiological conditions permits cultivation with improved yields of constituent. Recent reviews of the potential application of medicinal plant tissue cultures in studies of chemical constituents, transformation and growth, extend from fields of fermentation technology to biochemical engineering and pharmacy. (Teuscher, 1973).

The use of plant cell suspensions in production is enhanced by the possible control of growth with the elimination of environment factors such as microbial contamination. The biochemical potential of cell suspensions has been expected to be genetically the same as the plant tissue from which it was induced. (Turner, 1971).

Attempts to produce a range of medicinal compounds has resulted in a number of successes in particular for anthraquinones (Rai, 1976, Rai & Turner, 1974). and glycosides. In the range of quinone compounds, studies indicate possible high yields of laxative-type compounds particularly from Cassia spp.

Cultures of Glychyrrhiza glabra (liquorice) cells contain glycyrrhizin with yield of 3-4% of potential for anti-ulcer compounds (Killacky, 1977).

The demonstration illustrates techniques used in the production of the primary culture as callus (static) or suspension culture; use of bioreactors and cell growth measurement, and constituent evaluation - in particular from plant cell cultures with potential medicinal use. (Dioscorea, Fenugreek, Liquorice, Rumex and Rheum).

Teuscher, E., Pharmazie 28, 6-18 (1973).
Turner, T.D., Pharmaceutical Journal, 341-44 May (1971).
Rai, P.P., M.Sc Thesis, University of Wales (1976).
Rai, P.P., Turner, T.D., Greensmith, G., J.Pharm. Pharmacol, 26, 722-726 (1974).
Killacky, J. Personal Communication, 1977.

TWIN IMPINGER

D. Clough, G.W. Hallworth, Glaxo-Allenburys Research, Ware, Hertfordshire, UK

A simple device which separates the fine particle (pulmonary) and coarser fractions of inhalation aerosols by inertial impaction, for subsequent measurement by chemical analysis of the two fractions is presented. This device is useful for quality control and stability measurements of pressurised aerosols and powder inhalation products. The device and its method of operation will be demonstrated with some typical results.