D-40 Comparison of methods to determine phytotoxic effects of 2,4-D in cell suspension cultures of *Psophocarpus tetragonolobus* L.DC

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In *in vitro* selection of plant cells the evaluation of resistance to a herbicide is usually based on the response of suspension cultures to media containing the herbicide at a concentration that is inhibitory to the growth of wild type cells.
The inhibition of growth of cells in suspension is monitored by measurement of growth parameters of the cultured cells. Growth can be measured in cell cultures by different methods but all methods may not be equaliy sensitive. It is therefore useful to compare and evaluate at least 2 methods for a given herbicide in order to determine its phytotoxic effects on cells.

The objective of this study was to compare the sensitivity of 3 growth parameters, i.e. fresh weight, packed cell volume (PCV) and cell vitality, in estimating phytotoxic effects of the herbicide 2,4-D in cell suspensions of *Psophocarpus tetragonolobus.*

Of the 3 parameters used to study the inhibition in growth of cells in the presence of 2,4-D, fresh weight measurements provided the most useful information. With this parameter growth inhibition was seen at the highest concentration of the herbicide (10^{-3}M) whereas at the lowest concentration used (10^{-7}M) there appeared to be a growth promoting effect. Fresh weight measurements also indicated that the concentration of the herbicide that caused 100% inhibition of growth in relation to the control, was between 10^{-4}M and 10^{-3}M Fluorescein diacetate staining for vitality of cells did not give a clear result. The 2 techniques, fresh weight measurements and PCV, both indicated the growth inhibitory concentration of 2,4-D to be between 10^{-3}M and 10^{-5}M. However the overall sensitivity of fresh weight measurements was better showing a steady relationship between the concentrations of the phytotoxic compound and the weight change.