

Conservation of *Dioscorea rotundata*: Effect of Basal Medium Type and Naphthalene Acetic Acid on Growth and Microtuberization

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Abstract

Nodal cuttings of plantlets of *Dioscorea rotundata* cv. Puna were cultured in an NAA-enriched Murashige and Skoog medium and its modified form (T-Medium) in which NH_4NO_3 was omitted. Deposition of phenolic compounds was more in the NH_4^+ omitted medium with increasing concentration of NAA. There were differences in microtuberization response in the two media types used. However, for optimum tuberization, explants have to be pulsed in MS medium prior to culture in the medium. The modified medium supplemented with 25 μM and 50 μM NAA induced 670 mg and 500 mg respectively of microtubers. The sizes of microtubers produced favour the use of *in vitro* techniques for the induction of the propagules for the conservation and production of seed yam.

Introduction

Field genebanks have been the traditional methods for preserving yam germplasm. However, other conservation methods including *in vitro* conservation techniques, particularly the slow-growth method has been receiving attention. In this respect, the culture systems which could be used for *in vitro* conservation of yam including meristem culture, nodal culture, microtuberization, embryo and suspension culture (Ng & Ng, 1997).

Microtuberization, apart from serving the needs of conservation could also be a means of facilitating germplasm exchange as well as for the production of planting materials for farmers. Edible yams (*Dioscorea* sp.), particularly *D. roundata*, constitute one of the major tuber crops in West Africa. The propagation of this crop is by the use of edible (i.e. tuber) portions or small whole tubers as planting materials. Although this method produces genetically uniform materials, the rate of multiplication is low.

The rooting of vine cuttings, which are non-edible portions, in sand, however, with difficulty, has been used for the propagation of some yam species (Coursey, 1967, Wilson, 1982). The non-edible plant parts have proven to provide excellent explants for *in vitro* multiplication to produce large numbers of plantlets, as well as microtubers.

Various factors have been documented to influence microtuberization in yam. Mineral medium strength, nitrogen source in the medium, sucrose concentration, auxins, cytokinins and photoperiod have been shown to be some of the factors that influence *in vitro* tuberization in yam (Mantell & Hugo, 1989; Alhassan, 1991; Jean & Cappadocia, 1991, 1992; Ng and Ng, 1997). Cytokinin and cytokinin/auxin combinations have been in use frequently for *in vitro* tuberization in a number of yam species. Ng (1988) has reported on the use of kinetin for the initiation of microtubers in some *D. rotundata* varieties.

The paper provides preliminary