Short-term Storage of Encapsulated Zygotic Embryonic Axes of Tea (*Camellia sinensis* (L.) Kuntze) at Low Temperature

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ABSTRACT. *Studies on cold storage of encapsulated embryonic axes of tea (Camellia sinensis (L.) Kuntze) were carried out to obtain efficient plant recovery. Both encapsulated zygotic embryonic axes (formed in 3% sodium alginate and 100 mM calcium chloride) and natural seeds were stored at 4^0C for 0, 4, 8, 16 and 20 weeks. At the end of each period, the embryonic axes excised from stored natural seeds (control) and encapsulated embryonic axes were cultured on Murashige and Skoog (MS) basal medium supplemented with 3 mg/l Benzyl Aminopurine (BAP) and 0.5 mg/l Indole Butyric Acid (IBA). The results showed efficient germination and plant recovery from stored encapsulated embryonic axes compared to natural seeds. High rates of germination (95%) and plant recovery (58.3%) were achieved from encapsulated embryonic axes after four weeks of storage. Meanwhile, low percentage germination (16.7%) was observed from the embryonic axes isolated from natural seeds stored for the same period as compared to the non-stored embryonic axes (90%). Further, it revealed that there was no significant reduction in germination and plant recovery until 8 weeks of storage of encapsulated embryonic axes. Encapsulated embryonic axes are important in extending the seed viability and for efficient germination than natural seeds of tea.*

INTRODUCTION

Natural seeds of desirable genetic materials of tea (*Camellia sinensis* (L.) Kuntze) are stored at low temperatures (4-5^{0}C) until being used by researchers and breeders. Because of recalcitrant nature, tea seeds are unable to retain their viability during long-term storage (Kato, 1989). Salinero and Silva-Pando (1986) reported that seed viability of tea is relatively short-lived even under moist conditions at 3-5^{0}C. It is clearly implied by Kuranuki and Yoshida (1996) that cotyledons are highly susceptible to desiccation whereas excised embryonic axes were highly tolerant. Therefore, embryonic axes excised from tea seeds play an important role in short-long term storage at low temperature. Studies have been carried out on cryopreservation of embryonic axes of *C. sinenesis* (Chandel *et al.*, 1995; Chaudhury *et al.*, 1991; Kuranuki and Yoshida, 1996; Wesley-Smith *et al.*, 1992). However, there is no evidence on the cold storage of this type of conventional plant material of *Camellia* spp. at low temperature *i.e.* 4-5^{0}C.

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