

## Research Note

### NEW METHOD FOR LONG TERM STORAGE OF VIABLE MANGOSTEEN SEED<sup>1,2</sup>

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Mangosteen (*Garcinia mangostana*) is an important tropical fruit of economic value within the Clusiaceae family. The mangosteen's origin is unknown, but it has been suggested that it is an allopolyploid derived from *G. hombroniana* and *G. malaccensis* (Richards, 1990). Mangosteen trees are slow growing and are propagated by apomictic seed. Seeds are scarce because of the low seed number (Te-Chato and Lim, 2000). The seeds are adventitious embryos or hypocotyl tubercules, which exhibit a loss of viability in about five days after being excised from the fruit (Morton, 1987). The low number of seeds per fruit (two at most), with short duration of seed viability, necessitates the finding of alternative methods to prolong seed storage. Most vegetative propagation methods are unsuccessful; cuttings do not root and grafted buds are killed by fermentation of the yellow resinous latex that is exuded from the cortex (Almeyda and Martin, 1976). Tissue culture of mangosteen has been established by using seeds (Goh et al., 1988; Te-Chato and Aengyong, 1988), young leaves from in vitro and field grown seedlings (Te-Chato et al., 1992a, 1992b), and mature trees (Goh et al., 1990). The objective of this research was to develop a long term storage method for mangosteen seeds.

Seeds were aseptically dissected from fruits that were thoroughly washed with a 2% commercial antibacterial soap under running water for 30 minutes, dipped in 70% ethanol for one minute and rinsed three times with sterile distilled water. The extracted seeds were subsequently surface disinfected in a 10% bleach solution for 30 minutes, rinsed twice in sterile distilled water, and embedded in an agar based tissue culture medium. The medium consisted of one fourth strength Murashige and Skoog salts (MS) (Murashige and Skoog, 1962) supplemented with 7% sucrose and without growth regulators. The seed cultures were maintained under fluorescent lamps (25  $\mu\text{mol}/\text{m}^2/\text{s}$ ) at 24 to 26°C, 16/8 h.

Preliminary trials indicated that seeds of mangosteen, when planted as described, remained dormant. This dormancy was broken by transferring the seeds to a medium containing 1 g of vermiculite and 10 ml of liquid full strength MS medium. Germination occurred consistently within three to four weeks.

With the above described method, a total of 28 seeds were stored for up to 10 weeks. After this time, 18 of these seeds were transferred to the germination medium. Sixty-one percent of the seeds stored in this way germinated after three to four weeks and developed shoots and roots. The remaining 10 seeds were stored in the medium for 12 months, after which time seven germinated. This novel method for mangosteen seed storage maintains viability after extended time periods. These findings provide a space saving,

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economical way to store and transport mangosteen seed aseptically for long periods of time. Further studies are necessary to determine the maximum storage time for these seeds without loss of viability.

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