

A PRELIMINARY STUDY ON *IN VITRO* OVARY CULTURE OF TEA [*Camellia sinensis* (L.)]

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ABSTRACT

This study was carried out to investigate the possibility for regeneration of shoots from cultured ovary of Tea [Camellia sinensis (L.) O.Kuntze] clone - TRI 2025, which is a popular clone in the country due to its high yield potential, vigorous growth and tolerance to eelworm and drought. Unopened floral buds (4-6 mm length) from field grown shrubs were collected and sterilized in 70 % ethanol (v/v) for 1 minute followed by 5 % Clorox solution for 10 minutes. The immature ovaries were excised from the buds and were inoculated on MS medium (0.4 % agar) supplemented with 2,4- D (6.0 mg/l) alone and with 2, 4- D (6.0 mg/l) plus BAP (2.0 mg/l). They were also inoculated on half MS medium with 2,4-D (2.0 mg/l) alone and with 2,4- D (2.0 mg/l) plus BAP (1.0 mg/L). All cultures were incubated in dark and sub-culturing was done once a month. The calli were transferred to the same media but without 2,4- D and kept in light for the regeneration of shoots.

The results showed that browning and tissue necrosis were more in MS media compared to half strength MS media. High concentration of inorganic salts would have resulted in the accumulation of phenolic compounds, causing browning and subsequent necrosis of callus tissue. Callus induction and growth were relatively higher in half strength MS medium with 2,4- D (2.0 mg/l) and BAP (1.0 mg/l). After transferring the calli to 2, 4- D free MS media and when maintained in light, whitish yellow calli turned to greenish yellow but plantlets did not regenerate, even though the organization into green nodules were observed.

Key words: callus, *Camellia sinensis*, *In vitro*, MS medium, ovary culture

INTRODUCTION

Tea [*Camellia sinensis* (L.) O. Kuntze] a perennial crop is cultivated commercially for its tender leaf, which is used as a beverage in the world. Because of its economic importance and high demand, scientists nationally and internationally make continuous attempts to produce elite clones.

Tissue culture techniques have a wide application in breeding programmes, shortening the process to obtain new clones with economical interesting characteristics to increase the production of tea to meet its ever-increasing demand in the world. Since the improvement of tea using cellular and molecular biology techniques is difficult, cell culture procedures for this crop need to be investigated. This is however, has not yet been successful in Sri Lanka.

Haploid plants are of great importance in genetics and plant breeding research. Because of the difficulty in obtaining pure lines in out breeding, self-incompatible plant like tea and undue delays in producing homozygous inbred lines (pure lines) through inbreeding, the scientists have been searching for naturally occurring or artificially induced haploids to accelerate plant breeding programmes. Naturally occurring