

## Modulatory effects of *Syzygium aromaticum* (L.) Merr. & Perry and *Cinnamomum tamala* Nees & Ebre. on toxicity induced by chromium trioxide

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### Abstract

Hexavalent chromium trioxide is known to cause diseases like cancer and specific biological effects on the respiratory system. It induces oxidative stress and lead to formation of stable Cr-DNA adducts that contribute to its cytotoxic and genotoxic effects. In the present study, the antigenotoxic effects of Indian spices viz. *Syzygium aromaticum* (L.) Merr. & Perry and *Cinnamomum tamala* Nees & Ebre. was evaluated using the *Allium cepa* root chromosomal aberration assay against CrO<sub>3</sub>. Roots were given three kinds of treatment. In pre-treatment, roots were first treated with different concentrations of methanol extract of *Syzygium aromaticum* (MSA) and *Cinnamomum tamala* (MCT) (0.1%, 0.50% and 1%) for 2 h followed by chromium trioxide treatment (CrO<sub>3</sub>-8 ppm, 2 h). In post-treatment roots were first treated with CrO<sub>3</sub> (8 ppm, 2 h) followed by different concentrations (0.1%, 0.50% and 1%) of MSA and MCT extract for 2 h. In simultaneous treatment, the root tips are treated with CrO<sub>3</sub> (8 ppm) and different concentrations of MSA and MCT extract (0.1%, 0.50% and 1%) simultaneously for 2 h. The treatment of roots with 8 ppm CrO<sub>3</sub> served as positive control. The effects of pre-, post- and simultaneous treatment of MSA and MCT extracts resulted in a dose-dependent decrease in chromosomal aberrations frequency.

**Keywords:** Chromium trioxide; *Syzygium aromaticum*; *Cinnamomum tamala*; Antigenotoxic.

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### Introduction

Chromium compounds are prevalent in the industrial areas due to their use in welding, leather manufacturing and metal surface dumping etc. Chromium in environment is introduced mainly because of combustion of fuel, industrial processes. Chromium has many