

Effect of *Eucalyptus citriodora* extract on *hsp70* expression and tissue damage in the third instar larvae of transgenic *Drosophila melanogaster* (*hsp70-lacZ*)Bg⁹

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Received: 5 March 2012, Revised: 18 April 2012, Accepted: 19 April 2012

Abstract

The effect of leaf extract of *Eucalyptus citriodora* was studied on *hsp70* expression by using soluble O-nitrophenyl- β D-galactopyranoside (ONPG) assay. The tissue damage was evaluated by trypan blue exclusion assay. The extract was studied at 1, 2, 4, 6, 8, 10 and 12 μ l/ml of food concentrations and third instar larvae were exposed to these concentrations for 24 and 48 hrs. The results showed a significant dose dependent increase in expression of *hsp70*. The tissue damage was not observed for the 24 hrs of exposure at all concentrations studied, very little damage was observed after 48hrs of exposure in salivary glands and malpighian tubules at 12 μ l/ml of food concentration of extract. The dose of 1 μ l/ml of extract did not induced significantly, expression of *hsp70* for 24 hrs of exposure, but expression was significantly higher as compared to control for 48 hrs of exposure at the same dose i.e. 1 μ l/ml.

Keywords: *Eucalyptus citriodora*; *Drosophila melanogaster* (*hsp70-lacZ*)Bg⁹, *hsp70*

Introduction

Volatile oils present in plants are the complex mixtures of terpenes. They give them characteristic odor, flavor, and a number of other properties (Batish et al., 2006). The essential oils have been used since antiquity in flavor and fragrances, attractants, herbivore deterrents, stress tolerant, insect/pest repellent, pesticidal agent etc. (Barton, 2000; Langenheim, 1994; Holopainen, 2004; Peñuelas and Llusià, 2004; Dorman and Deans, 2000; Isman and Machial, 2006; Bakkali et al., 2008; Batish et al., 2006). *Eucalyptus citriodora* or lemon scented *eucalyptus* is a good source of *eucalyptus* oil, which is not only use in pharmaceutical but also in perfumery and other industries (Brooker and Kleinig, 2006). *Eucalyptus* oil is generally regarded as non toxic and has been placed under GRAS (Generally Regarded as