

Title: Acute and sub-acute toxicity study of selected medicinal plants for the application of perfumery

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Abstract

Objective: - This study was aimed at investigating the acute and sub-acute toxicities of essential oils of *Cymbopogon martini* and *Cymbopogon nardus* in mice model.

Methods: - The median lethal dose (LD_{50}) of essential oils of *Cymbopogon martini* and *Cymbopogon nardus* was determined according to the method described by Chinedu et al, 2013. The repeated dose 28-day oral toxicity study was conducted in female mice in accordance with Organization for Economic Cooperation and Development (OECD) 407 guideline. Experimental mice were randomly allocated in five groups of 10 mice in each. Group I received the same volume of saline and considered as the control group. Group II and Group III were treated with *C. martini* at a dose of 500 mg/kg and 1000 mg/kg body weight respectively. Group IV and Group V were administered with *C. nardus* at a dose of 500 mg/kg and 1000 mg/kg body weight respectively. Acute toxicity study results and traditional claims were used for determination of doses for sub-acute toxicity study.

Results: -The acute toxicity study showed that the LD_{50} of essential oils of *C. martini* and *C. nardus* was found to be greater than 5000 mg/kg body weight. Treatment related signs of toxicity and mortality were not observed in both sexes of mice treated with essential oils of *C. martini* and *C. nardus* at doses of 500 mg/kg and 1000 mg/kg body weight during 4 weeks follow-up. Histopathological examination of the liver and kidney of mice that received essential oil of these plants at doses of 500 mg/kg and 1000 mg /kg body weight did not reveal abnormal findings.

Conclusion: - The data generated from the current study provide the safety of essential oils of *Cymbopogon martini* and *Cymbopogon nardus* for cosmetic purpose. In conclusion, Ethiopian *C. martini* and *C. nardus* essential oils may be considered as non-toxic.

Keywords: - Acute toxicity, Sub-acute toxicity, *Cymbopogon martini*, *Cymbopogon nardus*