

Genotoxicity and cytotoxicity of *Aloysia polystachia*: an in vivo study in rabbits

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In the search of new compounds useful for the treatment of neurological disorders, medicinal plant research has progressed widely in the last decade, particularly because of the hypothesis that natural extracts possess a low or absent toxicity. *Aloysia polystachia* (Griseb.) Moldenke belonging to the family of Verbenaceae has been used in the traditional medicine for a variety of indications and as a sedative. Recently, some evidence reported that it exhibits some antidepressant- and anxiolytic-like effects involving the modulation of GABA system in preclinical studies in mice (1). However no investigations have been performed on its (geno)toxicity in long-term studies as it would be required for its use in neurological pathologies. In this study, we investigated the genotoxic potential of a water soluble extract of *Aloysia polystachia* leaves, administered orally every day for 90 days to 20 New Zealand white rabbits homogeneous for weight and age. Subjects were divided into four groups: the control group, and three experimental groups fed with a diet supplemented with 1g/kg; 1.5 g/kg and 2g/kg of *Aloysia Polystachia*, then peripheral blood was drawn from the vein auricularis marginalis before and after 45 and 90 days of treatment. Cytogenetic analysis was performed on each subject at each time point and chromosome aberrations (structural and numerical) and mitotic index were used as a measure of DNA damage and cytotoxicity (2). Results indicated that *Aloysia polystachia* extract induces a significant increase in the percentage of aberrant cells as well as in the aberration frequency (mainly chromatid breaks and fragments) associated with a decreasing trend of the mitotic index. The DNA damage was particularly higher after the first 45 days of treatment whereas it remains significantly high but almost unvaried until the end of the treatment. These data suggest that *Aloysia polystachia* extract has genotoxic and cytotoxic activity, even though further investigations are required to assess which compound of the extract could be responsible for the observed effects.

References

- [1] Sarris et al. (2013) Plant-based medicines for anxiety disorders, Part 1: a review of preclinical studies. *CNS Drugs* 27: 207-219.
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Keywords

Aloysia polystachia; genotoxicity; rabbit.