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Genotoxicity and mutagenicity of *Rosmarinus officinalis* (Labiatae) essential oil in mammalian cells *in vivo*

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ABSTRACT. *Rosmarinus officinalis* (rosemary) oil is widely used by the cosmetic, food, and pharmaceutical industries as a fragrance component of soaps, creams, lotions, and perfumes. Although it is popular, potential harmful side-effects of the oil have been described. We investigated the genotoxic and mutagenic potential of essential oil of *R. officinalis* in rodents, using comet, micronucleus and chromosome aberration assays. The animals were treated by gavage with one of three dosages of rosemary oil (300, 1000 or 2000 mg/kg). Liver and peripheral blood cells were collected from Swiss mice 24 h after treatment for the comet assay (genotoxicity endpoint), along with bone marrow cells for the micronucleus test (mutagenicity endpoint). Bone marrow cells were collected from Wistar rats 24 h after oil treatment for the micronucleus and chromosome aberration assays. Based on the comet assay, all three doses of rosemary oil induced significant

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increases in DNA damage in the mouse cells. There was a significant increase in micronucleated cells and chromosome aberrations only at the two higher doses. We conclude that rosemary essential oil provokes genotoxic and mutagenic effects when administered orally.

Key words: Chromosome aberrations; Comet assay; Essential oil; Micronucleus test; *Rosmarinus officinalis*

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