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Antigenotoxic effects of Satureja hortensis L. on rat lymphocytes exposed to oxidative stress

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Abstract

The protective properties of Satureja hortensis L. on the rat lymphocytes DNA lesions were tested. Lymphocytes were isolated from blood samples taken from healthy rats. DNA breaks and resistance to H_2O_2-induced damage were measured with the comet assay. Rat lymphocytes were incubated in S. hortensis ethanolic extract (SHE) (0.05, 0.1, 0.5, 1.0, and 2.5 mg/ mL), essential oil (SHEO)(0.05, 0.1, 0.5, 1.0, and 2.5 μL/mL), H_2O_2 (50, 100, and 200 μM), a combination of H_2O_2 (200 mM) with either SHE (1.0, 2.5 mg/mL) or SHEO (1.0, 2.5 μL/mL) at 4° C for 30 min, and the extent of DNA migration was measured using a single-cell microgel electrophoresis technique under alkaline conditions. Treatment of rat lymphocytes with SHE or SHEO resulted in significant reduction of H_2O_2-induced DNA damage compared to controls. SHE exhibited a significant (P<0.01) inhibitory effect on oxidative DNA damage at 2.5 mg/mL. SHEO (1.0 and 2.5 μL/mL) also showed significant inhibitory effects (P <0.01) on H_2O_2 induced chromosomal damage. In conclusion both the ethanolic extract and the essential oil of the plant reversed the oxidative damage to rat lymphocytes induced by hydrogen peroxide.

Reaxys Database Information

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Author keywords

Antigenotoxicity; Antioxidant; DNA damage; Satureja hortensis

Indexed Keywords

EMTREE drug terms: antimutagenic agent; essential oil; hydrogen peroxide; plant extract

EMTREE medical terms: animal; article; chemistry; comparative study; DNA damage; dose response; drug effect; in vitro study; lymphocyte; male; metabolism; oxidative stress; plant leaf; plant stem; rat; savory; Sprague Dawley rat

MeSH: Animals; Antimutagenic Agents; DNA Damage; Dose-Response Relationship, Drug; Hydrogen Peroxide; Lymphocytes; Male; Oils, Volatile; Oxidative Stress; Plant Extracts; Plant Leaves; Plant Stems; Rats; Rats, Sprague-Dawley; Satureja
Medline is the source for the MeSH terms of this document.

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