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Antigenotoxic effects of *Satureja hortensis* L. on rat lymphocytes exposed to oxidative stressMosaffa, F.^{ab}, Behravan, J.^{abd}, Karimi, G.^c, Iranshahi, M.^b^a Biotechnology Laboratory, Biotechnology and Pharmaceutical Sciences Research Centers, Mashhad University of Medical Sciences, Mashhad, Iran^b Department of Pharmacognosy and Biotechnology, School of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran^c Department of Pharmacodinamy and Toxicology, School of Pharmacy, Mashhad University of Medical Sciences, Mashhad, Iran^d Dept. Pharmacognosy and Biotechnology, School of Pharmacy, P. O. Box 91775, 1365, Mashhad, Iran

Abstract

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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 H₂O₂-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), H₂O₂ (50, 100, and 200 μM), a combination of H₂O₂ (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 H₂O₂-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 H₂O₂ 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.

Chemicals and CAS Registry Numbers: hydrogen peroxide, 7722-84-1; Antimutagenic Agents; Hydrogen Peroxide, 7722-84-1; Oils, Volatile; Plant Extracts

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