

Antigenotoxic effects of the disulfide compound persicasulfide A (PSA) on rat lymphocytes exposed to oxidative stress

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Abstract

The antigenotoxic effect of persicasulfide A (PSA) from *Ferula persica* on DNA damage induced by hydrogen peroxide (H₂O₂) was evaluated using single cell gel electrophoresis (SCGE). PSA was extracted from *F. persica*, characterized by NMR and its antioxidant/antigenotoxic effects were investigated. The antigenotoxic effect of solutions containing either PSA (1, 10, 50, 100, 200, 300, 400 and 500 μM) or ascorbic acid (200, 500, 700 and 1000 μM) alone, or in the presence of H₂O₂ (20, 50, 100 and 200 μM) were tested on lymphocytes derived from the blood of healthy male Wistar rats (200-250 g) by using the comet assay. The degree of damage to DNA after exposure to different solutions was calculated based on the amount of DNA present in the tail compared to the total amounts of lymphocyte DNA. PSA did not show genotoxicity and caused a 50% reduction in DNA damage induced by H₂O₂ (EC₅₀: 476, 47 ± 67, 46 μM). Compared to the EC₅₀ for ascorbic acid (1299, 22 ± 200, 21 μM), it was deduced that PSA was more effective than ascorbic acid in the prevention of oxidative damage to DNA. © Georg Thieme Verlag KG Stuttgart.

Author keywords

Antigenotoxicity; Apiaceae; Comet assay; *Ferula persica*; Persicasulfide A

Indexed Keywords

EMTREE drug terms: antioxidant; ascorbic acid; hydrogen peroxide; persicasulfide A; unclassified drug; antimutagenic agent; disulfide

EMTREE medical terms: antioxidant activity; article; blood sampling; comet assay; controlled study; DNA damage; fennel; *Ferula persica*; genotoxicity; lymphocyte; male; nonhuman; oxidative stress; rat; animal; chemistry; drug effect; Wistar rat

Species Index: Apiaceae; *Ferula persica*; *Rattus*; *Rattus norvegicus*

MeSH: Animals; Antimutagenic Agents; Comet Assay; Disulfides; DNA Damage; *Ferula*; Hydrogen Peroxide; Lymphocytes; Male; Oxidative Stress; Rats; Rats, Wistar

Medline is the source for the MeSH terms of this document.

Chemicals and CAS Registry Numbers: ascorbic acid, 134-03-2, 10421-10-0, 50-81-7; hydrogen peroxide, 7722-84-1; disulfide, 16734-12-1; Antimutagenic Agents; Disulfides; Hydrogen Peroxide, 7722-84-1; persicasulfide A