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BOOK OF ABSTRACTS

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T1-P-46 DNA protective potential of pinitol against ethyl methanesulfonate induced genotoxity in *Drosophila melanogaster*

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KEYWORDS: Pinitol; SLRL assay; *in vivo*; genotoxicity; antigenotoxicity

INTRODUCTION: The search for non-genotoxic bioactive products from natural sources in the interest of prevention and treatment of various diseases is an important research line. Pinitol, a cyclic polyo, isolated from *Ceratonia siliqua L.*, has been suggested to exert a wide range of biological activities, i.e., antioxidant, antitumor, hepatoprotective, antibacterial, insulinomimetic, immunomodulator, and antiaging. Potentially beneficial effects of pinitol have been reported in treatments of osteoporosis and Alzheimer's disease. Although several studies have supported potential health benefits from pinitol, genotoxic and antigenotoxic effects is still unknown.

OBJECTIVES: The aim of the present study was to determine *in vivo* genotoxic effect of pinitol on ethyl methanesulfonate (EMS)-induced DNA damage in germ cells of *Drosophila melanogaster*. In order to identify compounds that might protect DNA from damage, the antigenotoxic effects of pinitol against DNA damage induced with EMS were evaluated in *D. melanogaster* males using the sex-linked recessive lethal (SLRL) test.

METHOD/DESIGN: To assess the genotoxic effect three days old Canton S males were treated with pinitol in concentration of 100 ppm. In order to detect protective activity against DNA damage, D. melanogaster males were exposed to EMS in concentration of 0.75 ppm, 24 h prior to pinitol in the concentration of 100 ppm. The standard procedure for the detection of sex linked recessive lethal mutations on *D. melanogaster* was applied.

RESULTS: EMC induced a statistically significant sex linked recessive lethal mutations in all three broods at a dose of 0.75 ppm. The treatment with pinitol in concentration of 100 ppm reduced the frequency of sex linked recessive lethal mutations in comparison with the negative control value. Compared with the sucrose, as the negative control, pinitol decreased ($p > 0.05$) the genotoxicity of EMS in postmeiotic germinative cell line – at spermatozoids and spermatids, and in premeiotic line – spermatocytes. The frequency of germinative mutations induced by EMS decreased with high significance ($p < 0.001$***) after post-treatments with pinitol.

CONCLUSIONS: The results indicated that pinitol exhibited a DNA protective potential against EMS and also it did not induce the genotoxic effect alone in tested concentration in *D. melanogaster* males using the sex-linked recessive lethal test.

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