

The Effect of Santolina Plant Extract on Nitro-Oxidative Stress

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Abstract : Introduction: Santolina rosmarinifolia is a plant of the Santolina genus, a family made of medicinal plants widely used. Some of the Santolina species have been proven to have potent anti-inflammatory and anti-oxidant effects. However, no in vivo study has been made to demonstrate this in Santolina rosmarinifolia. The aim of our study is to experimentally evaluate the potential anti-inflammatory and anti-oxidant effects of Santolina rosmarinifolia plant extracts on acute inflammation in rats. These effects are defined by measuring the modifications on nitric oxide, reactive oxygen species and anti-oxidant response in serum. Materials and Methods: Rats were divided into 5 groups (n=6). Three groups were given Santolina rosmarinifolia extract by gavage in different concentrations (100%, 50%, 25%) for a week. Inflammation was induced by i.m injection of turpentine oil on the 8th day. One group was only given turpentine oil and the fifth group acted as control and was given only saline solution. Blood was collected and serum separated. Global tests were used to measure the oxidative stress, total oxidative status (TOS), total antioxidant reactivity (TAR) and the modified method of Griess assay to measure NO synthesis. Malondialdehyde (MDA) and thiols levels were also assessed. Results: Santolina rosmarinifolia did not significantly change the TOS levels ($p > 0.05$). Santolina rosmarinifolia 25% and 50% decreased significantly the TAR levels ($p < 0.001$). Santolina 100% didn't have a significant effect on TAR ($p > 0.05$). All concentrations of Santolina rosmarinifolia increased the oxidative stress index (OSI) significantly ($p < 0.05$). Santolina rosmarinifolia 100% significantly decreased NO synthesis (p value < 0.05). In the diluted Santolina groups, no significant effect on NO synthesis was observed. In the groups treated with Santolina 100% and Santolina rosmarinifolia 50%, thiols concentration were significantly higher compared to the inflammation group ($p < 0.02$). A higher stimulatory effect was found in the Santolina 25% group (p value < 0.05). MDA levels were not significantly modified by the administration of Santolina rosmarinifolia ($p > 0.05$). Conclusion: All three solutions of Santolina rosmarinifolia had no important effect on oxidant production. However, Santolina rosmarinifolia solutions had a positive effect by increasing the thiols concentration in the serum of the models. The sum of all the effects produced by the administration of Santolina did not show a significant decrease of nitro-oxidative stress. Further experiments including smaller concentrations of Santolina rosmarinifolia will be made. Santolina rosmarinifolia should also be tested as a curative treatment.

Keywords : inflammation, MDA, nitric oxide, santolina rosmarinifolia, thiols, TAR, TOS

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