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Document Title : *Cytogenetic and Molecular Evaluation of Genetic Effects of Leaves Extract of Rhazya stricta (Decne)*

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Abstract : In this study, the genotoxicity and cytotoxicity of the medicinal plant Rhazya stricta (used in folkloric medicine in Saudi Arabia) were evaluated through the capability of its aqueous leave extract in induction of clastogenesis, mutagenesis and carcinogenesis on three biological systems as follows: 1- Allium cepa root meristem cells The root meristem cells of this plant were treated with three different concentrations of R. stricta leaves extract, for different exposure times. Consequently, a decrease in the mitotic index and frequency of mitotic phases were detected. On the other hand, the interphase was highly increased and an extensive cell death (pyknosis) was recorded. The mutational frequency and the chromosomal aberrations were noticed to increased. The molecular analysis for the DNA and the protein in all treatments demonstrated a significant decrease in DNA quantities. The RAPD technique illustrated a polymorphic genetic bands, and the SDS-page technique showed a decrease in the total protein in all treatments compared to the control. All of these results are clearly conclusive evidence that R. stricta has a genotoxic, cytotoxic and anti-carcinogenic effects. 2- Aspergillus terreus conidia spores The conidia of this fungus were treated with four different concentrations of R. stricta extraction for different times of exposure. Consequently, a decrease of survival rate and an increase in mutational rate was detected by, which a fourteen auxotrophic mutants were obtained. The molecular analysis revealed a significant decrease in DNA and protein quantities for all mutants compared with wild type, and same type of protein and genetic bands that obtained in A. cepa test were observed. These results again, denote that R. stricta is a mutagenic agent. 2- Human blood lymphocytes The lymphocytes were exposed to three different concentrations of R. stricta extract for three different times of exposure. Similar results of the previous cytogenetic findings of A. cepa test were obtained, that is an increase in micronuclei and necrosis cells were detected, these results are clearly the proofing evidence that R. stricta has anti-carcinogenic effects. The Comet assay for each treatment revealed a significant increase in comet cells frequency compared with the control. The final conclusion of all of these different experiments denote very clearly and confidently that Rhazya stricta with no doubt is a mutagenic and clastogenic agent.

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