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ABSTRACT

Research Paper

EVALUATION OF GENOTOXIC AND ANTIGENOTOXIC POTENTIAL OF MEDICINAL PLANTS (GARCINIA INDICA AND HIBISCUS ROSA SINENSIS) IN SWISS ALBINO MICE

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Genotoxic profile of a drug can be established by *in vitro* and *in vivo* tests designed to detect genetic damage directly or indirectly by various mechanisms. Environmental and chemical mutagenic drugs disturbs DNA synthesis and cell division, they may have damaging effect on tissues with normally low mitotic indices. They have Cytotoxic and radiomimetic actions generating reactive oxygen species such as Superoxide (O_2^-); Nitric oxide (NO), Hydrogen peroxide (H_2O_2) and Peroxy radicals in a biological system. These reactive oxygen species have been implicated in certain chronic and ageing diseases, including malaria, rheumatoid arthritis, cataracts acquired immunodeficiency syndrome, heart disease, stroke, arteriosclerosis, diabetes, cancer and neurodegenerative diseases (Parkinson's and Alzheimer's diseases).
Garcinia indica has been reported to possess cytotoxic activity, ascribed to its chemical constituent, xanthochymol and isoxanthochymol and its antioxidant activity is attributed to garcinol, hydroxycitric acid and other chemical constituents. By virtue of its cytotoxic activity the plant could be expected to possess genotoxic activity and due to its antioxidant property it could prevent Genotoxicity of anticancer drug, when administered with the latter. Due to paucity of information about the plant in this regard, the present study was planned to evaluate aqueous fruit rind extract of *garcinia indica* for its genotoxicity if any, and its effect on cyclophosphamide induced genotoxicity.
Hibiscus rosa sinensis linn (fam: malvaceae) is one such Indian herbal plant used extensively to treat a spectrum of ailments. *Hibiscus rosa sinensis* has been reported in prevention of two-stage skin carcinogenesis. As per latest information no invivo antigenotoxic or anticlastogenic activity of this drug has been performed, therefore the present study was designed to investigate in vitro antioxidant and genotoxic potential if any and effect on cyclophosphamide induced genotoxity in mice, using micronucleus assay and COMMET assay as experimental models. Genotoxicity can be detected by a variety of tests like Ames test, micronucleus test, chromosomal aberration test, comet assay (SCGE), unscheduled DNA synthesis assay, point mutation assay etc. Comet assay is simple, sensitive and rapid method for screening DNA double and single strand breaks, which can be further confirmed by micronucleus assay.

KEY WORDS: Genotoxicity, Clastogenicity, Aneugenicity, Anticlastogenic activity, Genetic toxicology, Mutations, Micronucleus assay and Carcinogenesis.

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