Short Communication

Biochemistry & Analytical Biochemistry

2021

Vol.10, No.2

Biotechnology Congress 2021 : Biochemical studies on the effect of turmeric on breast cancer of mouses by Fayoum University

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Chemoprevention is regarded as one of the most promising and realistic approaches in the prevention of toxic effects of carcinogenic compounds. In this study, we investigated the chemoprevention efficacy of turmeric for 120 days against a single dose of (10 mg/rat) 7, 12-dimethylbenz (a) anthracene (DMBA). 60 rats were divided into four groups, 15 for each: Group I: Control; Group II: Injected with DMBA that induces mammary carcinoma; Group III treated with 5% turmeric before and after injection with DMBA; Group IV treated with 5% turmeric only as Control 2 and the treatments were administered daily for 4 months. At the end of experiment, the animals were sacrificed under anesthesia and their sera were used for evaluation of markers of tumorigenicity (serum levels of Total Sialic Acid (TSA) and carcino-embryonic antigens), markers of endocrine derangement (serum prolactin and estradiol) and markers of oxidative stress (MDA for lipid peroxidation, nitric oxide and total antioxidant). The breast tissues were investigated for malignancy. Results showed statistically significant elevation of Malondialdhyde (MDA), Carcinoembryonic Antigen (CEA), total sialic acid, prolactin, estradiol and nitric oxide and also statistically significant decrease in body weight and total antioxidant in serum of DMBA treated rats as compared with control group but administration of turmeric was associated with decreased levels of tumorigenicity, endocrine derangement and oxidative stress. Histopathological examination revealed the formation of tumor in DMBA-induced rats and these abnormal changes were ameliorated in the rats supplemented with turmeric. In conclusion, these results suggested that supplementation of diet with turmeric provided antioxidant defense with chemopreventive activity against DMBA-induced mammary tumors. We have assessed the chemopreventive impacts of curcumin on diethylstilbestrol (DES)- instigated tumor advancement of rodent mammary organs started with radiation. Sixty-four pregnant rodents got entire body illumination with 2.6 Gy γ-beams from a 60Co source at day 20 of pregnancy and were partitioned into two gatherings in the wake of weaning. In the benchmark group of 39 rodents took care of a basal eating regimen and afterward embedded with a DES pellet for 1 year, 33 (84.6%) created mammary tumors. Twenty-five rodents were taken care of diet containing 1% curcumin following weaning and got a DES pellet, with respect to the control. The organization of dietary curcumin fundamentally decreased the occurrence (28.0%) of mammary tumors. Variety and Iball's list of mammary tumors were likewise diminished by curcumin. Rodents took care of the curcumin diet indicated a decreased rate of the advancement of both mammary adenocarcinoma and ER(+)PgR(+) tumors in correlation with the benchmark group. On long haul treatment with curcumin, body weight and ovarian weight were decreased, yet liver weight was expanded. Contrasted and the control rodents, the curcumin-took care of rodents indicated a critical decrease in serum prolactin, while estradiol-17β and progesterone focuses were not essentially extraordinary between the two gatherings. Curcumin didn't have any impact on the grouping of free cholesterol, cholesterol ester and triglyceride. Taking care of the curcumin diet caused a noteworthy increment in the groupings of tetrahydrocurcumin, arachidonic corrosive and eicosapentaenoic corrosive and a huge decline in thiobarbituric corrosive receptive substance focus in serum. Entire mounts of the mammary organs demonstrated that curcumin yielded morphologically undefined multiplication and separation from the organs of the control rodents.

These discoveries recommend that curcumin has a strong preventive movement during the DES-subordinate advancement phase of radiation-

prompted mammary tumorigenesis. DES, diethylstilbestrol, ER, estrogen receptor, FSH, follicle animating hormone, LH, luteinizing hormone, LPS, lipopolysaccharide, MDA, malondialdehyde, NOS, nitric oxide synthase, PgR, progesterone receptor, TBARS, thiobarbituric corrosive responsive substances. Issue Section: Molecular Epidemiology and Cancer Prevention Presentation Epidemiological studies recommend that diet affects malignancy frequency. Visit utilization of vegetables and organic products diminishes the hazard for human disease. As of late, consideration has been centered around recognizing dietary phytochemicals which can hinder the procedures of carcinogenesis. Concentrates of plants or their fractionated fixings were found to have inhibitory impacts against artificially prompted carcinogenesis. Curcumin is a significant segment of turmeric, the dried rhizome of Curcuma longa L. which is generally utilized as a yellow shading and seasoning operator in food in Asian nations. Business grade curcumin has demonstrated anticarcinogenic action in creatures as showed by capacity to square colon tumor commencement prompted by azoxymethane and skin tumor advancement instigated by phorbol ester. Moreover, curcumin has been accounted for to have calming action and is a strong inhibitor of responsive oxygen-creating chemicals, for example, lipoxygenase/cyclooxygenase, xanthine dehydrogenase/oxidase and nitric oxide synthase (NOS).

Absence of a mutagenic impact of curcumin was additionally announced in the nearness or nonattendance of a rodent liver microsomal enactment framework in the Ames test with Salmonella typhimurium. Bhavanishankar et al. found that a liquor separate (counting curcumin) of turmeric was non-harmful, despite the fact that curcumin has been accounted for to repress the development of a wide assortment of tumor cells, though typical cells were seen as generally safe. In the current investigation, we have assessed the chemopreventive impacts of curcumin on diethylstilbestrol (DES)- incited tumor advancement of rodent mammary organs started with radiation and the endocrinological and pharmacological exercises of the operator are examined. Curcumin, generally utilized in nourishments as a shading specialist, was gotten from Aldrich Chemical Co. (Milwaukee, WI). Diet containing 1% (w/w) curcumin was set up in scone structure by Funabashi Farm (Chiba, Japan). A basal eating routine (MB-1) of a similar structure was utilized for the control tests. The significant parts of MB-1 are as per the following: all out starch, 54.1%; protein, 24.6%; fat, 4%; fiber, 3.8%; dampness, 7.7%; debris, 5.8%. DES, cholesterol and sulfatase were bought from Sigma (St Louis, MO). β-Glucuronidase was bought from Wako Pure Chemical Industies Ltd (Osaka, Japan). Pellets were set up in a clinical evaluation Silastic tube (Dow Corning Co., Midland, MI) and were loaded up with 3 mg DES blended in with 27 mg cholesterol. [2,4,6,7-3H]Estradiol-17β (sp. act. 4 TBq/mmol), [17α-methyl-3H]R5020 (sp. act. 3 TBq/mmol) and non-named R5020 (17α,21-dimethyl-19-nor-4,9-pregnadiene-3,20-dione) were bought from Du Pont/NEN Research Products (Boston, MA). Every mammary tumor was fixed promptly in 10% formalin cradled with 0.1 M phosphate cushion (pH 7.2). Every paraffin area (4 μm in thickness) was arranged and recolored with hematoxylin and eosin. The tumors were named adenocarcinoma or fibroadenoma as indicated by the standards for the order of rodent mammary tumors.

Biography

Soha Mohamed Hamdy has completed her PhD in 2001 from Fayoum University. Presently, she is a Professor in Faculty of Science - Chemistry Department at Fayoum University, Egypt.