Effects of Some Pyrimidine Derivatives and Pomegranate Juice on Male Rat kidney Injuries Induced by Diethylnitrosamine and Carbon tetrachloride

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ABSTRACT:

The kidney possesses most of the common xenobiotic metabolizing enzymes, and is thus able to make an important contribution to the body's metabolism of drugs and foreign compounds. The effect of pyrimidine derivatives 6-amino-2-thiouracil (ATU), 2-thiouracil (TU) and 5-flurouracil (5FU), and pomegranate juice (PJ) on kidney nitric oxide (NO), malondialdehyde (MDA), DNA fragmentation (DNAF), caspase-3 levels and kidney function tests in rats treated with diethyl nitrosamine (DEN) and carbon tetra chloride CCl_4 was studied. The effect of PJ on rat not treated with DEN and CCl_4 was studied also. Administration of rats with DEN and CCl_4 caused an elevation in the levels of NO, MDA, DNAF, caspase-3 and kidney function tests, compared to the control. Treatment of rats with PJ pre, during, and post DEN and CCl_4 administration improved kidney function and decreased the levels of NO, MDA, DNAF, and caspase-3 activities better than that in DEN-5FU, DEN- ATU, DEN-TU groups compared to the DEN group, indicates that PJ reduced the oxidative stress and apoptosis induced by DEN and CCl_4 better than that in 5FU, ATU, TU. Administration of healthy rats with PJ only for 5 weeks not induced oxidative stress and apoptosis for kidney tissues. Treatment with 5FU after DEN and CCl_4 administration showed severe toxicity which was higher than that induced by DEN and CCl_4.

KEYWORDS:

apoptosis, diethylnitrosamine, DNA fragmentation, thiouracil, fluorouracil, pomegranate juice.