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In vitro antimicrobial activity of leaves of *Cestrum nocturnum* against multidrug resistant typhoid fevers causing pathogenic microbes

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The methanol extract of leaves of *Cestrum nocturnum* was tested for its antimicrobial activity against various pathogenic strains of *E. coli, V. cholerae, Shigella dysenteriae, Salmonella typhi, Salmonella paratyphi A and Salmonella paratyphi* B using both agar diffusion and broth dilution methods. The methanol showed considerable activities against *S. typhi* (24, 23 and 25 mm, respectively), *S. paratyphi* A (24, 24 and 25 mm, respectively) and *S. paratyphi* B (24, 24 and 26 mm, respectively). The hexane extract and aqueous extract did not show any significant activity on the tested bacteria strains. Minimum inhibitory concentration (MIC) varied from 1.25 to 2.5 mg/ml against different strains similar results were obtained for other tested strains too. The extracts proved to be bactericidal against all microbes except *S. typhi and S. paratyphi A*. The methanol extract was also screened against some multidrug resistant (MDR) clinical isolates too where results were very promising. Flavonoids, anthraquinones, triterpenes, saponins and tannins were found to be present, whereas alkaloids were not detected. Thus the results obtained suggested that methanol extract of leaves of *Cestrum nocturnum* has maximum *in vitro* antimicrobial activity against the causative agents of typhoid and paratyphoid fevers. It can be used alone or in synergism to combat drug resistance. However, *in vivo* study (i.e. antityphoid study) and sub-chronic toxicity study should be done further to ascertain the antityphoid action and determine the effect of the extract at the level of tissues and organs.

Potent anti-cancer effect of crocin against hepatocellular carcinoma: A preclinical study

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This is a follow up on our study featured in October 2011 issue of "Science News" that documented the anti-cancer potential of saffron. We show here the chemopreventive actions and mechanisms of saffron-based bioactive ingredient; crocin, against diethylnitrosamine (DEN)-induced liver cancer in rats. Administration of crocin at 100 and 200 mg/kg body wt per day started two weeks prior to the DEN injection and was continued for 22 weeks. Crocin reduced the number and the area of placental glutathione-S-transferase-positive (GST) foci in livers of DEN-treated rats. Furthermore, crocin counteracted DEN-induced oxidative stress in rats as assessed by restoration of superoxide dismutase, catalase, and GST levels and diminishing of myeloperoxidase activity, malondialdehyde and protein carbonyl formation in liver. The results of immunohistochemical staining of rat liver showed that crocin inhibited the DEN-mediated elevations in numbers of cells positive for Ki-67, cyclooxygenase 2, inducible nitric oxide synthase, nuclear factor-kappa Bp-65 and the phosphorylated tumor necrosis factor receptor. Crocin also blocked the depleted numbers of cells positive for TUNEL and M30 CytoDeath in livers of DEN-treated rats. In vitro experiments carried out using HepG2 cells also confirmed these findings and showed inhibition of NFkB activation, increased cleavage of caspase-3, and DNA damage and cell cycle arrest upon crocin treatment. The present study provides evidence that crocin exerts a significant chemopreventive effect against liver cancer through inhibition of cell proliferation and induction of apoptosis. We also show some evidence that crocin protects rat liver from cancer via modulating oxidative damage and suppressing inflammatory response.

Biography

Amr Amin is a graduate faculty at UAE University who supervised many graduate theses. He earned his Ph.D. from University of Illinois at Chicago and received a postdoctoral training at University of Pennsylvania School of Medicine. Preventive medicine is his main research interest at the present time. His lab studies roles of natural products in the protection against diabetes and cancer. He published over 60 research articles, reviews and book chapters in reputable journals. He serves on the editorial boards and as a reviewer of many international journals. He is also the recipient of many national and international awards.