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Original Article

Evaluation of Chemoprotective Effect of Quercetin from *Argyreia speciosa* against N-methyl-N-Nitro-N-Nitrosoguanidine and NaCl-Induced Gastric Carcinomas in Wistar Rats

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ABSTRACT

Objectives: This study was carried out to investigate the chemo protective potential of Quercetin, an isolated compound from *Argyreia speciosa,* on N-methyl-N-nitro-N-nitrosoguanidine and NaCl-induced gastric carcinomas in Wistar rats. **Methods:** The rats were fed with a diet supplemented with 8% NaCl and simultaneously given N-methyl-N-nitro-N-nitrosoguanidine. After administration of the carcinogen, quercetin was administered. The whole stomach and a part of duodenum were sampled, cut open and tumors were recorded. The specimens were histopathologically investigated and the expression of surviving was examined with immunohistochemical analysis. **Results and Conclusion:** The treatment with quercetin significantly increases body weight in the rats after N-methyl-N-nitro-N-nitrosoguanidine administration. Survivin expression in glandular stomachs of normal rats, of rats in adenocarcinomas and quercetin at dose dependent manner treated rats were 0%, 90%, 75%, 33.3-25%, respectively. Compared with the survivin expression in negative rats, the differences were significant. Compared with the survivin expression in normal rats, the differences were significant. Histological observations of stomach tissues too correlated with the biochemical observations. These findings indicated that the Quercetin treatment could stimulate immunity activity in rats with N-methyl-N-nitro-N-nitrosoguanidine induced gastric carcinoma and have pronounced effect on survivin which is an attractive target for gastric cancer therapy.

Key words: *Argyreia speciosa*, Gastric carcinoma, Immunochemistry, Quercetin.

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INTRODUCTION

A wide variety of biological activities from medicinal plants have recently been reported, in addition to their traditional medicinal effects. Herbal medicines have attracted considerable interest as alternative cancer remedies because of their low toxicity and costs. *Argyreia speciosa* (Linn. f.), sweet is a popular Indian medicinal plant, which has long been used in traditional ayurvedic medicine. This plant is pharmacologically studied for nootropic,[1] immunomodulatory,[2]hepatoprotective,[3]antioxidant,anti-inflammatory[4] and wound healing activity.[5] A wide range of phytochemical constituents have been isolated from this plant like quercetin, kaempferol and kaempferol 3-O-L-rhamnopyranoside,[6] 7, 8, 3',4',5'-pentahydroxyflavone, 5-O-α-L-rhamnopyranoside and 7, 8, 3',4',5'-pentahydroxyflavone 5-O-β-D-glucopyranoside,[7]

Globally, gastric carcinoma is the 5th most common cancer with 952,000 cases diagnosed in 2012. It is more common in men and in developing countries. In India, the number of new stomach cancer cases in 2001 was estimated to be approximately 35,675 (n = 23,785 in men; 11,890 in women). Survivin, a member of the inhibitors of apoptosis protein (IAP) family, is a mitotic spindle-associated protein involved in linking mitotic spindle function to the activation of apoptosis in mammalian cells,[8] The structure of full-length human survivin determined by X-ray crystallography is 2.7 A°,[9] The structure forms a very unusual bow tie-shaped dimer. The unusual shape and dimensions of survivin suggest that it serves as an adaptor through its alpha-helical extensions,[10] Just like other IAP members, survivin can suppress apoptosis through combination with Caspase3, Caspase7 by baculoviral IAP repeat (BIR).[11,12] The common pathway of apoptosis is the activation of Caspase3, Caspase7 or Caspase6, hence high expression of survivin may protect cells from many apoptotic sig-

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