

Effect of BOPF grade Sri Lankan black tea (*Camellia sinensis* L.) produced in different agro-climatic elevations on gastroprotective activity in rats

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The aim of this study was to investigate the effect of Sri Lankan BOPF grade black tea [*Camellia sinensis* (L) O. Kuntze] produced in different agro-climatic elevations on gastroprotective activity using rats. Black tea infusion (BTI) for oral administration in rats was prepared using representative black tea samples obtained from major three agroclimatic elevations: high- (>1200m, average mean sea level); mid- (1200 – 600m, amsl) and low grown (< 600m, amsl). Three doses of BTI (300, 600 and 2400 mg/kg bw of rat/day ((n = 9/Group) which is equivalent to 1½, 3 and 12 cups/day respectively for human). Cimetidine (20 mg/kg, positive control) and water (negative control) were used in the assessment of gastroprotection activity. The gastroprotection action was evaluated using three well established rat gastric lesion models: ethanol-induced (oral), indomethacine-induced (oral) and serotonin-induced (subcutaneous). The results revealed that, the Sri Lankan orthodox BOPF grade black tea possesses marked dose dependent and significant ($p < 0.05$) oral acute gastroprotective activity (in terms of reduced number of mucosal haemorrhagic lesions, shortening of the length of gastric lesion and impaired perforation area of gastric lesions). This is a novel finding to BOPF grade Sri Lankan black tea. The order of potency of gastroprotective activity was: low grown > mid grown > high grown, which could be attributed to the differences in caffeine, catechins and theaflavins contents in black tea amongst the agroclimatic elevations. The gastroprotection activity of BOPF grade black tea was mediated via multiple mechanisms: impairment of gastric volume, gastric juice acidity, gastric acid production, anti-purgative or gut transit time, pepsin content and improvement of endogenous mucosal protection barrier, gastric mucosal blood flow in experimental rats, and increments of conductivity and antioxidant activity of BTI. It is concluded that, BTI of BOPF grade of Sri Lankan black tea has *potent gastroprotection and gastric ulcer healing capability* and seem to function as a natural beverage food for gastroprotection in the rat model used. This potency of the gastroprotective activity of BOPF grade black tea differs in different agro-climatic elevations.

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