

PHCOG MAG.: Research Article**Antidiarrhoeal activity of Sri Lankan Dust grade Black Tea (*Camellia sinensis* L.) in mice**

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*Department of Zoology, University of Colombo, Colombo 03, Sri Lanka.**Author of Correspondence: Professor W. D. Ratnasooriya ; E-mail: wdr@zoology.cmb.ac.lk***ABSTRACT**

This study examined the antidiarrhoeal potential of Sri Lankan black tea (*Camellia sinensis*) in mice using high grown unblend Dust grade No: 1 tea. Different concentrations of black tea brew (BTB) [84 mg/ ml (equivalent to 1.5), 167 mg/ ml (equivalent to 3), 501 mg/ ml (equivalent to 9) or 1336 mg/ ml (equivalent to 24)], or a high concentration (equivalent to 9 cups) of green tea brew (GTB) of Chinese and Japanese types or reference drug, loperamide (10 mg/ kg) were orally administered to different groups of mice (N = 9-12/group) and were subjected to two antidiarrhoeal tests: normal defecation test and castor oil-induced diarrhoea test. The results show that BTB of Sri Lankan Dust grade tea dose-dependently and markedly decreased the number of faecal boluses produced in the normal defecation test and improved the severity of the diarrhoeal condition in the castor oil-induced diarrhoea test. However, the antidiarrhoeal effect of BTB was superior to Japanese type of GTB and inferior to loperamide. BTB also prolonged the gastrointestinal transit time, impaired intestinal fluid secretion, increased intestinal fluid absorption and reduced *in vitro* nitric oxide production. It is concluded that Sri Lankan black tea possesses marked antidiarrhoeal activity which is mediated via multiple mechanisms. The finding also supports the folkloric claim that Sri Lankan black tea is a good remedy for acute non specific diarrhoea.

Key words: Black tea; *Camellia sinensis*; antidiarrhoea; diarrhoea; Sri Lankan tea

INTRODUCTION

Tea, which is manufactured from the topmost immature leaves and the buds of *Camellia sinensis* (L.). O. Kuntz (Family: Theaceae) plant (1) is the most popular beverage of the world today. Depending on the manufacturing process there are three major types of tea: black (fully aerated or fully fermented), green (un-aerated or unfermented) and oolong (partially aerated or semifermented) (1). According to Sri Lankan folkloric medicine black tea brew is a good remedy for acute nonspecific diarrhoea. However, in Sri Lankan traditional and Ayurvedic medicine black tea is not indicated for the treatment of diarrhoea (2). In a recent study conducted in India, it has been shown that black tea brew made from Indian grade of BOP (Broken Orange Pekoe) black tea possesses marked antidiarrhoeal activity (3). However, this finding does not necessarily mean that Sri Lankan black tea also possesses antidiarrhoeal activity since final composition of tea brew and hence its pharmacological properties is known to vary with several factors such as

country of origin, geographical background of soil, the cultivating method, the collection season, the age of the leaves, grades of tea, brewing conditions of time and temperature (4, 5, 6).

Therefore, this study was undertaken to investigate scientifically whether Sri Lankan black tea also has antidiarrhoeal activity. This was tested in mice using unblend Sri Lankan high grown Dust grade No: 1 black tea. The Dust grade was selected as it is the most popular and widely consumed type of black tea in Sri Lanka.

MATERIALS AND METHODS**Experimental animals**

Healthy adult ICR mice (25-30 g) and rats (180 -200 g) purchased from Medical Research Institute, Colombo, Sri Lanka were used. These animals kept under standardized animal house conditions (temperature: 28-31 °C, photoperiod: approximately 12 hours of natural light per day, relative humidity 50-55%) at the animal house of the Department of Zoology, University