

Effect of Sri Lankan high grown black tea (*Camellia sinensis* L. O. Kuntze) on motility of human spermatozoa *in vitro*

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ABSTRACT

This study examined the effects of black tea brew (BTB) on motility of human spermatozoa *in vitro*. This was done using Sri Lankan high grown Dust grade N black tea and freshly ejaculated human semen. Different concentrations (250, 500, 1000 mg/kg) of BTB was made in isotonic saline (0.9% NaCl, w/v) using freeze dried tea samples. These were mixed with equal volumes of fresh semen adjusted to a density of 20×10^6 and motility assessments were made at +5, +15, +30, and +45 min of incubation at 37 °C using WHO criteria. The results showed that BTB did not change the percentage motility of spermatozoa significantly ($P > 0.05$). However, BTB apparently induced a marked increase in the lateral head displacement of spermatozoa. In addition, BTB was non toxic to sperm. It is suggested that Sri Lankan high grown black tea may be beneficial for male fertility.

Key words: *Camellia sinensis*, Sri Lankan tea, black tea, Dust No. 1, sperm motility, human sperm

INTRODUCTION

The typical black tea brew (BTB) processed from tender shoots of the perennial shrub *Camellia sinensis* L. O. Kuntze (Family: Theaceae) is used as a regular consumed beverage in many communities in the world. In fact, it is the most consumed beverage of the world besides water (Modder and Amarakoon, 2002). A typical BTB contains 0.35% tea solids in water. This includes a variety of phytochemical constituents including caffeine, theophylline, flavonoids, and fluoride in an easily assimilable form (Balentine et al., 1997; Modder and Amarakoon, 2002). These four constituents are known to affect sperm function (Haesungcharern and Chvlavantnatol, 1973; Levin et al., 1981; Aitken et al., 1983; Schoff and Lardy, 1987; Loughlin and Agarwal, 1992).

Caffeine is a well known sperm motility stimulant (Haesungcharern and Chvlavantnatol, 1973; Levin et al., 1981; Aitken et al., 1983). Evidence is also present to show that theophylline enhances sperm motility (Loughlin and Agarwal, 1992). Flavonoids are strong antioxidants scavenging reactive oxygen species (ROS) and free radicals.