

Whilst the NHAA recognises the limitations of animal experimentation and the possible suffering involved, and recognises the sensitivities of many of its members in this regard, it also recognises that some of our most valuable understanding of herbal mechanisms comes from animal studies with experiments impossible to perform in vitro and unethical in vivo in humans. In this instance it is considered the research fits within the guidelines of our Code of Ethics (that research be conducted in an ethical manner with the emphasis on human trials rather than animal studies) and is considered of sufficient interest to be included in the Journal. The Association welcomes the views of its members.

Cassia fistula and hypoglycaemia

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Stem bark of *Cassia fistula* Linn. (Family Leguminosae) is used as a component in several compound decoctions recommended by Sri Lankan traditional physicians for diabetes mellitus. However its effectiveness as an antidiabetic agent in monotherapy is not known. The aim of this study was to assess the antidiabetic potential of aqueous bark extract (ABE) of *C. fistula*. This was done in normoglycemic and streptozotocin-induced diabetic rats. Acute doses and chronic oral dose of ABE significantly lowered the fasting blood glucose level. Further ABE markedly improved the oral glucose tolerance test rapidly. In contrast the highest dose of ABE failed to reduce blood glucose level of streptozotocin-induced diabetic rats. ABE significantly inhibited the glucose absorption from the small intestine and provoked glycogen accumulation in liver and skeletal muscle. In contrast it failed to inhibit rise in blood glucose following a sucrose challenge. ABE was well tolerated: no overt signs of toxicity, hepatotoxicity or nephrotoxicity. In addition ABE elicited an impairment of serum triglyceride level. It is concluded the ABE of *C. fistula* possesses safe mild to moderate anti diabetic activity.

Key words: *Cassia fistula*, hypoglycaemia, antidiabetic, diabetes

Introduction

In Sri Lanka traditional medical practitioners use decoctions made from entire and/or parts of single plants or several (usually 5-10) plants. Several of the commonly prescribed multiplant decoctions contain bark of *Cassia fistula* (family Leguminosae, Ehala in Sinhala and Appai in Tamil) as one of the components (Jayasinghe 1994, Tissera 2001).

C. fistula is a small or moderate size deciduous tree (about 20 m tall) with slender branches, alternate stipulate leaves with glabrous stem with a brown and rough bark. Flowers are pale yellow, large and irregular (Jayaweera 1981).

Curiously *C. fistula* bark is not used singly for diabetes mellitus, although it is often recommended for fever, heart diseases, acute bronchitis, pneumonia, malarial affections and chronic rheumatism (Jayaweera 1981).

However it is possible that *C. fistula* bark may possess antidiabetic properties as a decoction made from a close relative of the plant, *C. auriculata*, is

used in the treatment of diabetes mellitus (Sabu 2002).

If *C. fistula* is proven to have safe oral blood sugar lowering properties then it may be therapeutically recommended as an affordable and accessible antidiabetic agent, particularly for the poor, as this plant occurs throughout tropical India, Malaya, China, Java, Philippine Island and Sri Lanka (Dassanayake 1991). It is common in the forests of dry zones of this island (Dassanayake 1991, Jayaweera 1981).

The aim of this study was to investigate the ability of *C. fistula* bark to lower blood sugar levels. This was tested using normoglycaemic and streptozotocin-induced diabetic rats.

Materials and methods

Animals

Healthy adult cross-bred albino male rats (weight: 200-250 g) from a colony maintained at the Department of Zoology, University of Colombo, were used. The rats were housed under standardised animal house conditions