



Original Article

Antibacterial, Cytotoxicity and Antioxidant Activity of *Trema orientalis*

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Abstract

Methanol and aqueous extracts of leaf of *Trema orientalis* Linn were subjected to the phytochemical and pharmacological screening. The phytochemical study showed the presence of alkaloids, tannins and steroids in both methanol and aqueous extract. In addition, the methanolic extract contains reducing sugars, and aqueous extract contains gums, flavonoids and saponins. The pharmacological interest of these compounds, coupled with the use of this plant in traditional medicine prompted us to test *Trema orientalis* for cytotoxic, antibacterial and antioxidant activities. The extract showed mild to moderate antibacterial activity against both Gram-positive and Gram-negative bacteria. The methanolic extract also possesses potent anti-oxidant activity as compared with ascorbic acid, which was used as standard. The results also showed toxicity in the brine shrimp lethality bioassay with lethal concentration 50 (LC₅₀) of 120 µg/ml and (LC₉₀) of 200 µg/ml. The present study supports the use of this plant in traditional medicine and suggests its further investigation.

Key words: Antibacterial activity, antioxidant, cytotoxicity, lethal concentration 50% (LC₅₀), inhibitory concentration 50% (IC₅₀), phytochemical, *Trema orientalis*

Introduction

Nature is and will still serve as the man's primary source for the cure of his ailments. Plants are the basic source of knowledge of modern medicine. The basic molecular and active structures for synthetic fields are provided by rich natural sources. This burgeoning worldwide interest in medicinal plants reflects recognition of the validity of many traditional claims regarding the value of natural products in health care. The relatively lower incidence of adverse reactions to plant preparations compared to modern conventional pharmaceuticals, coupled with their reduced cost, is encouraging both the consuming public and national health care institutions to consider plant medicines as alternatives to synthetic drugs.

Trema orientalis (Bengali: Jibon or Chikon) is a small tree belongs to the family Ulmaceae. The plant, reaching 10-20 m tall, is widely distributed through a range of altitudes in higher rainfall areas. It is common along the margins of lowland and upland forests, extending into riverine forests and forest gaps. It is a pioneer species and is found in clearings and on abandoned farmland¹. The plant is distributed in almost all districts of Bangladesh. It is

also found in subtropical and tropical regions of southern Asia, northern Australasia, Africa and South and Central America. The leaves are alternate, simple, 7-15 cm long, ovate-acuminate to lanceolate with a long pointed tip. The leaf base is frequently unequal. Leaves taper from the base to the apex, and vary from 60 to 150 mm long and 25 to 50 mm wide. Leaf margins are finely serrated, and the young leaves are rough and hairy, occasionally becoming smooth when old. Plant leaves are widely used in traditional medicine by the rural people and possesses various interesting pharmacological activities².

The problem of microbial resistance is growing and the outlook for the use of antimicrobial drugs in the future is still uncertain. Therefore, actions must be taken to reduce this problem, for example, to control the use of antibiotic, develop research to better understand the genetic mechanisms of resistance, and to continue studies to develop new drugs, either synthetic or natural. The ultimate goal is to offer appropriate and efficient antimicrobial drugs to the patient.

Antioxidant substances block the action of free radicals, which have been implicated in the pathogenesis of many diseases

