COMPARATIVE STUDY OF ANTIBACTERIAL, ANTIFUNGAL AND CYTOTOXIC EFFECTS OF DIFFERENT EXTRACTS OF DILLENA INDICA THUNB AND ABROMA AUGUSTA LINN

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The present study was designed to evaluate in vitro antibacterial, antifungal and cytotoxic effects of ethanol and petroleum ether extracts of two Bangladeshi medicinal plants Dillenia indica and Abroma augusta. Aiming to investigate antibacterial and antifungal activities, disc diffusion method was followed using eleven pathogenic bacteria and six fungi as test organisms. The plant extracts (400 µg/disc) showed moderate antibacterial activities (zone of inhibition (zoi): 8-15 mm) which was compared with standard kanamycin (30 µg/disc), while extracts showed positive antifungal activities (zoi: 10-18 mm) and griseofulvin (1.0 µg/disk) was used as standard antifungal agent. During evaluation of in vitro cytotoxicity effects of the plant extracts, brine shrimp lethality bioassay was performed observing mortality rate of brine shrimp nauplii (Artemia salina) and the LC50 value observed by probity analysis as 574.926, 334.284, 380.875 and 307.459 for DIET, DIPE, AAET and AAPE respectively. Current studies indicated that both plant extracts possessed moderate antimicrobial activities and good cytotoxic properties.

Key words: Dillenia indica, Abroma augusta, Antimicrobial activity, Cytotoxicity, Disc diffusion method.

INTRODUCTION

At present, herbal medicine represents one of the most important fields of traditional medicine all over the world. To promote the proper use of herbal medicine and to determine their potential as sources for new drugs, it is essential to study medicinal plants having folklore reputation in a more intensified way. A huge number of the world's population have exclusively been used medicinal plants for centuries as remedies for human diseases (Nostro et al 2000; Arokiyaraj et al 2008). As a result, different extracts from traditional medicinal plants have been tested to identify the source of the therapeutic effects (Ali et al, 2001; El-Fiky et al 1995). Some natural products have been approved as new antibacterial drugs, but there is still an urgent need to identify novel substances that are active towards pathogens with high resistance (Barbour et al 2004; Redo et al 1989; Cragg et al 1997). Recently, multiple drug resistance has developed due to indiscriminate use of commercial antimicrobial drugs commonly used in the treatment of infectious diseases (Service, 1995) making it a global growing-problem. Meanwhile, over 50% of all drugs in clinical trials for anticancer activity were isolated from natural sources or are related to them (Cragg and Newman, 2000). Hence, Brine shrimp lethality test (BST) has been employed as an alterantive bioassay technique to screen the plant extracts (Meyer et al 1982; Mitscher et al 1972). Dillenia indica Thunb (Family: Dilleniaceae) locally named Chalta, Chalita (Bangali), Dillenia (English), Bhavya, Bharja (Sanskrit) that is widely distributed in sub-Himalayan tract including Bangladesh, India (Garhwal to Assam, Arunachal Pradesh, Manipur,