

SCREENING OF SOME WEED PLANTS FOR THE FEEDING, GROWTH AND DEVELOPMENT PARAMETERS OF *SPODOPTERA LITURA* AND *SPILARCTIA OBLIQUA*

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ABSTRACT : Experiments were conducted to determine antifeedant and growth inhibitory activities of hexane, diethyl ether and acetone extracts of nine weed plants (5 and 10%) viz., Krishna neel, *Anagallis arvensis* (Primulaceae); Lantana, *Lantana camara* (Verbenaceae); Bhang, *Cannabis sativa* (Cannabaceae); Motha, *Cyperus rotundus* (Cyperaceae); Gajar Ghans, *Parthenium hysterophorus* (Asteraceae); Goat weed, *Ageratum conyzoides* (Asteraceae); Aakh, *Calatropis gigantea* (Apocynaceae); Doob grass, *Cynodon dactylon* (Poaceae); Amarbel, *Cuscuta reflexa* (Convolvulaceae) against *S. litura* and *S. obliqua* larvae. All tested plant extracts at 10% conc. were found more effective against the feeding activity of mentioned insects as showed moderately, strongly and extremely antifeedant activity. On the basis of antifeedant activity some selected plant extracts were tested against growth and development activity of *S. litura* and *S. obliqua*. Among all the treatments acetone extract of plants viz., *P. hysterophorus* and *C. sativa* were found to be most effective against the larvae of *S. litura* and *S. obliqua* respectively with maximum terminal larval mortality (30.00 and 23.33%).

Key words : Plant extracts, antifeedant, growth, development, *S. litura* and *S. obliqua*.

INTRODUCTION

Plant derived pesticides/ plant products is a form of bio-pesticide provide a more natural, “environmentally friendly” approach to pest control (Sharma *et al*, 2006). Crude plant extracts often consist of complex mixtures of active compounds, they may show greater overall bioactive effect compared to the individual constituents (Chen *et al*, 1995). The detrimental effects of crude plant extracts on insects are manifested in several ways, including toxicity, feeding and growth inhibition (Wheeler and Isman, 2001). The search for plant-derived chemicals that have potential use as crop protectants often begins with the screening of plant extracts. Plant families, particularly Meliaceae, Rutaceae, Asteraceae, Labiateae, Piperaceae and Annonaceae are viewed as the promising sources of plant-based insecticides (Jacobson, 1989; Schmutter, 1990). The use of plant and plant-derived products to control pests in the developing countries is well known. Plant based insecticides are the slow-acting protecting compounds of natural occurrence, usually safer to humans with minimal residual effects to the environment than pesticides (Carlini and Grossi-de-Sá, 2002). Most plant defensive chemicals act as feeding deterrent and oviposition or by impairing larval growth rather than by killing insect. The botanical insecticides are generally pest-specific and are relatively harmless to

non-target organisms, biodegradable and harmless to the environment. Furthermore, unlike conventional insecticides plant derived insecticides comprise an array of chemical compounds which act on both behavioral and physiological processes (Leatemia and Isman, 2004). On the basis of surveys and reports, plants based insecticides were found to be effective against various insect pests. There are various polyphagous pests exerts extensive damage to the various crops, among which Lepidopterous defoliators play an important role (Kamaraj, 2008). Antifeedant compounds impair development and may involve chronic as well as acute toxic effects over insects. Therefore, in the present investigation antifeedant effect of some plant extracts was studied against the larvae of *S. litura* and *S. obliqua* and the present study aims not only on evaluation of the effectiveness of the selected botanicals in their antifeedant activity but also for their growth and development parameters.

MATERIALS AND METHODS

Maintenance of insect culture

Wild population of *S. litura* and *S. obliqua* were collected from Norman E. Borlaug Crop Research Centre (NEBCRC), Pantnagar. Rolling culture of test insects was maintained on castor leaves, under laboratory conditions (Temperature 28°C and relative humidity