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Efficacy of *Capparis decidua* in control of *Lymnea acuminata* and their cercaria larvae at Balsamand lake, Jodhpur

Jyotsna Shekhawat[1*] and Naresh Vyas[2]

[1]Department of Zoology & Environmental Science, Lachoo Memorial College of Science & Technology, Jodhpur (Rajasthan), INDIA

[2]Department of Zoology, Jai Narain Vyas University, Jodhpur (Rajasthan), INDIA

*Corresponding author. E-mail: jyotsnashekhawat@yahoo.com

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Abstract: The snail *Lymnea acuminata* is considered to be intermediate hosts because humans harbour the sexual stages of the parasites and the snails harbour the asexual stages. Herbs are believed to be safer than the synthetic drugs for the control of snails. Alcoholic extracts of *Capparis decidua* flowers have been evaluated for their lethal effect against *L. acuminata* and their cercarial larvae. 1%, 2%, 5% concentration of alcoholic flower extract of *Capparis* were not effective for cercaria after 9 hrs of treatment. 100% mortality was not observed in echinostome and furcocerous even in 24 hrs. But surprisingly after 17 hrs 100% mortality was observed in 5% concentration for xiphdio.

Keywords: *Capparis deciduas,* Echinostome, Furcocerous, *Lymnaea acuminate, Xiphidio*

INTRODUCTION

The term freshwater bivalve is very inclusive and not very informative. There are representatives of at least 19 families that have at least one representative living in freshwater (Bogon *et al.,* (2008). Positive associations have been suggested and sometimes shown between trematode prevalence in snails and the density of definitive hosts (Smith 2001), intermediate hosts (Hechinger *et al.,* 2007), and the snail hosts themselves (Ewers, 1964). The snail *Lymnaea acuminata* Lamark (Lymnaeidae) is the vector of liver flukes, *Fasciola gigantica* Cobbold (Fascioliodae) and *F. hepatica* Linnaeus (Fascioliodae) which are responsible for endemic fascioliasis in cattle population. Molluscs feed on decaying organic matter as well as on planktons. Dead plant materials are also the major items in the diet of most species of terrestrial molluscs as well as freshwater mollusks (Dillon, 2000). Traditional medicines are important sources of potentially useful new compounds for the development of chemotherapeutic agents (Racio *et al.*, 1989). The plant based natural constituents can be derived from any part of the plant like bark, leaves, flowers, roots, fruits, seeds, etc (Gordon and David, 2001) *i.e.* any part of the plant may contain active components. In addition, high cost and adverse side effects are commonly associated with popular synthetic antibiotic, the extracts from *Capparis decidua, Acacia arabica, Dalbergia sissoo, Ricinus communis* and *Parthenium hysterophorus* were evaluated for their repellent activity by Sharma (2003).

Snails have been studied for various parasitic infection of Balsamand Lake by Vyas and Shekhawat (2010). According to Farahnak *et al.* (2006) snail transmitted diseases are one of the major groups of helminth parasitic diseases which have been established by trematode parasites. The highest population of *L. acuminata* has been recorded in all seasons by Shekhawat and Vyas (2012). Therefore, the aim of the present study was to determine the efficacy of *C. decidua* for the control of *L. acuminata* and their cercaria larvae .

METERIALS AND METHODS

The snails were collected either handpicking or dragging a net through water and were transported to the laboratory. The snails were then transferred to glass water bowls and well aerated aquaria already provided a rich water plants like *Hydrilla, Fimbria, Spirogyara,*. The snail species were identified according to Tonapi (1980) and with the help of ZSI, Jodhpur. The *L. acuminata* was identified by its shell which is thin, oblong ovate, smooth, glossy externally and semi-translucent. The aperture is large and spirally twisted. Infected molluscan host usually showed "Gigentism" on examination and found that they were infected commonly with furcocerous, xiphidio, echinostome, monostome cercaria.

C. decidua is commonly known as kerda and kair is a small much branched tree or shrub of arid regions in Africa, Middle East and southern Asia, including the Thar Desert. The flowers are pink-red, single or in threes beside

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leaves and about 1cm across. Flowers appear at the beginning of the dry season. Red conspicuous flowers appear in March to April and August–September and ripe by May and October. Selected plant flowers were collected directly from plants, dried and then finely powdered using a blender. The powder was subjected to alcoholic extraction following the method of Subramanian and Nagarjan (1969). Ten snails were placed in 100 ml of individual concentration of each extract and mortality rate per hour was recorded after 6, 9, 11, 17, 24 and 48 hrs.

RESULTS AND DISCUSSION

The present study observed that alcoholic extracts of kair flower at 1%, 2%, 5% concentrations were not effective after 9 hrs of treatment as all types cercariae survived. 100% mortality was observed for echinostome and furcocerous in 24 hrs. But surprisingly 100% mortality was observed in 5% conc. for xiphdio after 17 hrs. The killing efficacy was low at lower concentration. However, Shekhawat *et al.* (2012 b) has reported that when *Melania tuberculata* was treated with *Acacia arabica*, . 100% mortality was found immediately in 5% concentration.Further, 1%, 5%, 10% concentrations of alcoholic extracts used for *L. acuminata* showed 100% mortality after 48hr, 24hr, and 24hr respectively and 25% mortality was observed in 17 hrs for 10% concentration of the extract.

The 5% concentration of flower extract of *C. decidua* was more effective for xiphidio because it gave 100% mortality but not for echinostome and furcocerous. Further, 5% and 10% concentration had more lethal effect than 1% concnetration. Thus, killing efficacy of the extracts declined at lower concentration. The efficacy of extracts of flower concentrations in present study was less in comparison to the study of Shekhawat *et al.*, (2012 a) who reported 100% mortality for the same snails with the use of leaves of *Azadirachata indica*.

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