

IN VITRO ANTI HEAD LICE ACTIVITY OF MACERATED EXTRACT OF LEAVES OF *ANNONA SQUAMOSA*

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ABSTRACT

Aim of this study was to evaluate preliminary phytochemical analysis and anti-head lice effect of leaves of extracts of *Annona squamosa*. Herbal remedies are considered convenient for management of head lice due to their traditionally acceptability, availability and less side effect than shampoo. Chemical shampoos and pediculicides increasing day by day but harmful to hair. The ethanolic and ethyl acetate extracts of leaves of *Annona squamosa* shows mortality time 300 seconds and 860 seconds respectively. So, the leaves extracts have potential to prevent or kill the head lice. In case of ethanolic extract have more potency than ethyl acetate plant extract.

Keywords: *Annona squamosa*, Anti headlice, *Pediculus humanus*, ethyl acetate, ethanol, maceration

INTRODUCTION

Pediculus humanus capititis, known as the human head louse, infestation is a major concern in public health-associated problems. Head lice are parasites that are found on human heads. The word lice is plural for louse. Head lice spread from person to person by head-to-head contact through direct contact with the hair of an infected person¹. Although less common, head lice can spread by personal contact or the sharing of comb, brushes, caps, and other clothing. Head lice are common problem with preschool and elementary school-aged children. Head lice (*Pediculus humanus capititis*) are parasites that can be found on the heads of people. Pediculosis is the term for an infection with head lice. There are three forms of lice, namely the nit, the nymph, and the adult louse. Nits are lice eggs. Nits are hard to see and are often confused with dandruff or hair-spray droplets. Nits are found firmly attached to the hair shaft, they are oval shaped, 2-3mm in length and usually yellow to white in colour. Nits take about a week to hatch. The nit hatches into baby louse called a nymph. It look like an adult head louse but is smaller. Nymphs mature into adult about seven days after hatching. To live, the nymph must feed on human blood. The adult louse is about the size of a sesame seed, has six legs, and is tan to greyish-white in colour. In people with dark hair, the adult louse looks darker. Females lay nits; they are larger than males. Adult lice can live up to 30 days on a person's head². In Malaysia, people by costly products in combating head lice and the money they plough into annually seems greater when they realize that the products they used were apparently ineffective. This lack of efficacy is due to the emergence of resistance by the head louse to synthetic compounds and researchers were aimed on the search of new substitutes to synthetic ingredients, such as phytoconstituents obtain from plant source. The knowledge of healing power of plant became a special calling of the priest and magician, and this knowledge become a source of power. For thousands of years, the role of the priest and physician were combined and exists today in the form of witch, doctor, shaman, exorcist's medicine man^{3,4,5}. The medicinal plants play an important role in the development of newer drug because of their effectiveness, less side effect and relatively low cost when compared with synthetic drugs. *Annona squamosa* linn belongs to the family Annonaceae⁶.

MATERIALS AND METHODS

The present study was carried out to evaluate the anti head lice activity of *Annona squamosa*. Qualitative analysis was done by using ethyl acetate extract and ethanolic extracts of the leaves. The details of the material used and the method followed are described below

Collection of plant materials

Leaves of *Annona squamosa* were collected in the month of September, 2019 from Mannancherry, Alappuzha (Kerala). The fresh leaves of *Annona squamosa* was dried for 17 days at room temperature.

Extraction of plant materials

The powdered leaves of *Annona squamosa* were taken. Maceration process involves the separation of medicinally active portions of the crude drugs. It is based on the immersion of the crude drug in a bulk of the solvents or menstruum (ethanol as well as ethyl acetate). Powdered drug material was taken in a beaker with about 200 ml solvent (ethyl acetate and ethanol) and allow to stand for at least 7 days in a warm place with frequent shaking. After seven days the mixture of crude drug-containing solvent was filtered until most of the liquid drains off. The extracts was concentrated to dryness by using heating mantle and the residues were transferred to petri dish and stored in refrigerator for further study⁷.

ANTI HEAD LICE STUDY

The ethyl acetate extract and the ethanolic extracts were tested for anti-head lice activity. The extracts were separately dissolved in coconut oil at dilutions of 1:10 to 1:8 (w:w). The same amount of each solution (0.05 ml) was put in a Petri dish and spread in a thin layer over a 2 cm² area. Seven equal-sized head lice collected from school girls' hair were placed in the Petri dish containing

solutions of the extract. Non-moving head lice, which were determined as dead Lice, were counted until all the lice were dead. The coconut oil was used as control⁸.

RESULTS

Preliminary phytochemical analysis was done and calculated the anti-head lice activity of *Annona squamosa* leaves. We take crude extracts of *Annona squamosa* leaves and control was diluted with coconut oil and performed mortality time given below tables and figures.

Table 1: Phytochemical screening of ethanolic and ethyl acetate extracts of *Annona squamosa* leaves

Sl no	Phytoconstituents	Ethyl acetate extract	Ethanolic extract
1	Alkaloids	+	+
2	Glycosides	+	+
3	Tannins	+	+
4	Sterols	-	+
5	Flavonoids	-	-
6	Terpenoids	+	+

Table 2: Anti head lice activity of macerated extracts of *Annona squamosa* leaves with mortality time

SI NO	DRUG	MORTALITY TIME IN SECONDS
1	Control	-
2	Macerated Ethanolic Extracts	300
3	Macerated Ethyl Acetate Extracts	860

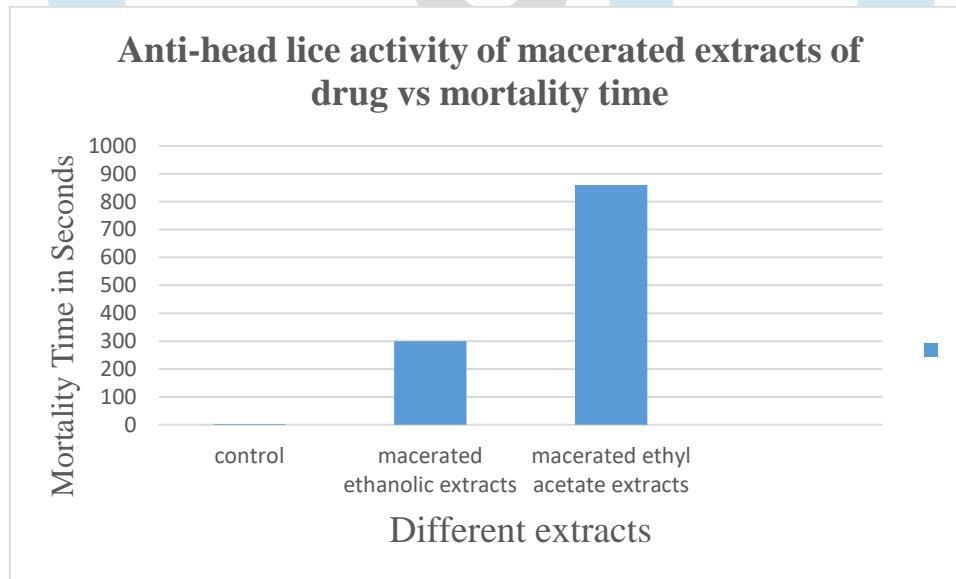


Fig 1: Anti headlice activity of mortality rate of different extracts of *Annona squamosa* leaves

The mortality time of macerated ethanolic extract was 300 seconds and mortality time of macerated ethyl acetate was found to be 860 seconds. So the ethanolic drug extract show more anti-head lice activity than ethyl acetate drug extract.

DISCUSSION

Preliminary phytochemical analysis of ethanolic and ethyl acetate extracts shows the presence of alkaloids, glycosides, tannins, flavonoids, terpenoids and sterols. The present study was focused on anti-headlice activity of *Annona squamosa* leaves instead of seeds⁹. The data revealed that the ethanolic as well as ethyl acetate extracts shows significant anti head lice activity. The macerated ethanolic extract of *Annona squamosa* shows mortality time 300 seconds and ethyl acetate extract shows 860 seconds. Control also performed. By comparing mortality time macerated ethanolic extract of leaves shows more anti-headlice activity than ethyl acetate extract. So mortality time of ethanolic extract take less time than ethyl acetate¹⁰.

CONCLUSION

The result of present study clearly indicated that the crude ethanolic as well as ethyl acetate extract of *Annona squamosa* leaves produce anti-headlice activity. Ethanolic extract of *Annona squamosa* leaves produce more effect than ethyl acetate extract. The current study leads to conclusion that the leaves of *Annona squamosa* have potent anti-headlice activity when compared to other extracts. Further studies to isolate the exact phytoconstituents constituents from leaves extract are required to carry out for better anti-headlice activity.

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