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European Journal of Experimental Biology, 2011, 1 (1):14-17



### Evaluation of Analgesic Activity of *Manilkara Zapota* (Leaves)

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#### ABSTRACT

*The present study was planned to assess the analgesic activity of petroleum ether and ethanolic extracts of Manilkara zapota on laboratory animals, using hot plate method. The results of present study concluded that petroleum ether and ethanolic extracts of Manilkara zapota at doses of 200 mg/kg possesses analgesic effect, which is in accordance with its experimental studies.*

**Key-words:** Analgesic activity, *Manilkara zapota*.

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#### INTRODUCTION

Nature has best owned upon us a very prosperous botanical prosperity and a large number of diverse types of plants cultivate wild in different parts of our country. In India, the use of different parts of medicinal plants to alleviate specific ailments was in practice form ancient times [1]. *Manilkara zapota* (family: Sapotaceae) commonly known as Sapota in Hindi, Simaiyiluppai in Tamil, Sapotasima in Telugu and American bully in English, is a large handsome tree with rough dark grey bark and dense crown. Leaves are oblong-lanceolate or elliptic-oblong, 7.5-12.5 cm in size, obtuse or subacute, shining both sides with numerous very fine inconspicuous secondary nerves. Flowers are long-pedicelled. Fruits are globose usually with 5 large black shining seeds, pink flesh and brownish epicarp. The seeds are known to be aperients and diuretic. The bark is used as a tonic and antipyretic [2]. In literature, *Manilkara zapota* has been reported as an antioxidant, [3] antibacterial, [4] and antimicrobial activity [5].

The present study was therefore planned to assess the analgesic activity of *Manilkara zapota* extracts on laboratory animals.

## MATERIALS AND METHODS

### Plant collection and identification

Leaves of *Manilkara zapota* were collected from open areas of Bhopal (Madhya Pradesh) and authenticated in Department of Biotechnology, Barkatullah University Bhopal, where a voucher specimen of plant has been deposited (voucher specimen No. 29 SAP). The plant was dried in shade and converted into coarse powder. This powder was stored in air tight container and used for preparation of extracts.

### Preparation of plant extracts

Dried powder of *Manilkara zapota* was subjected to extraction in Soxhlet using petroleum ether and ethanol as a solvent. The solvent was removed under reduced pressure which yields residues of extracts (petroleum ether 4.5% ethanol 15% with respect to dry powder).

### Evaluation of analgesic activity

#### Animals

The animals were procured and housed in the animal house maintained under standard hygienic Conditions, with food and water *ad libitum*. Institutional Animal Ethical Committee permitted the study. (Reg. No. 780/CPCSEA)

### Grouping of animals

The animals were divided into following four groups of 6 animals each.

Group I: Control, Group II: Standard (Aspirin 25mg/kg), Group III: Petroleum ether extract of *Manilkara zapota* (200mg/kg), Group IV: Ethanolic extract of *Manilkara zapota* (200mg/kg)

### Eddy's hot plate method [6]

The animals were individually placed on the hot plate maintained at 55°C, after their treatments. The response time (the time at which animals reacted to the pain stimulus either by paw licking or jump response) was noted before and 30, 60 minutes after the administration of extracts and standard drug.

### Statistical Analysis

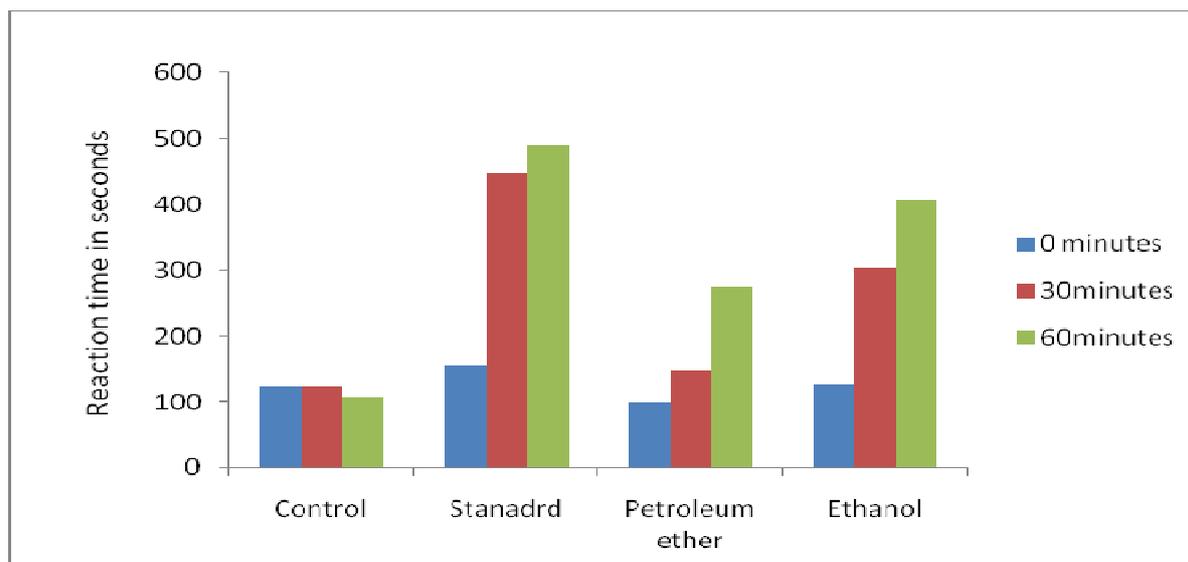
Data were subjected to statistical analysis using ANOVA. Comparison was carried out using student-t test. Values of  $p < 0.05$  were considered statistically significant.

## RESULTS AND DISCUSSION

In hot plate test, initial reaction times of control and extract treated Groups were recorded and they were found significant when compared with standard as shown in figure 1. An increase in reaction time is generally considered an important parameter of central and peripheral analgesic activity by Non selective COX inhibition and Nociceptors [7, 8]. Available literature stated that, plant possesses alkaloids, [9] flavonoids as chemical constituents, showed potent analgesic

activity. Preliminary phytochemical screening of petroleum ether and ethanolic extracts revealed the presence of steroids, alkaloids and phenolic compounds. Moreover, the activity may be attributed to the phytoconstituents present in the plant, jointly or separately. On the basis of these findings, it may be stated that *Manilkara zapota* is an effective agent for analgesic activity. Additional studies are required to recognize the actual chemical constituents that are present in the crude extract of this plant which are accountable for analgesic potential.

**Fig 1. Effect of petroleum ether and ethanol extract of *Manilkara zapota* leaves (Hot plate test) in rats**



## CONCLUSION

The results of present study concluded that petroleum ether and ethanolic extracts of *Manilkara zapota* possesses analgesic effect, which is in accordance with its experimental studies.

## Acknowledgement

Yogesh Shivhare, the author, would like to communicate their genuine thanks to Mr. Rakesh Punekar, Vice-Principal, RKDF College of Pharmacy, Bhopal (M.P.) for regular support for the success of this work.

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