

## In Vitro Anti Inflammatory Activity of *Tecomaria Capensis* (Thunb) Leaves of Different Extracts.

\*E.Tamil Jothi, P. Durga Nithya, N.Venkata lakshmi, V. Gopi Chand, P. Srinivasa Babu.  
Vignan Pharmacy College, Vadlamudi, Guntur, A. P, India.

### Abstract

*Tecomaria Capensis* (family: Bignoniaceae) also known as Cape-honeysuckle. The present work aims at evaluating the anti inflammatory activity of *Tecomaria Capensis* by HRBC membrane stabilization. The prevention of hypotonicity induced HRBC membrane lysis was taken as a measure of the anti inflammatory activity. The anti inflammatory activity of the crude Ethyl Acetate extract (EAE), Ethanol extract (EE), Water extract (WE) of leaves part of *Tecomaria Capensis* were compared to that of the standard drug diclofenac. The percentage protection of lysis for Standard Diclofenac 100 µg is 27.203%, Standard Diclofenac 200 µg is 38.972%, Ethyl acetate extract 100µg is 21.985%, Ethyl acetate extract 200µg is 31.765%, Ethanolic extract 100µg is 33.221%, Ethanolic extract 200µg is 41.447%, Aqueous extract 100 µg is 13.25%, Aqueous extract 200µg is 21.112%. The ethanolic extract of *Tecomaria capensis* has significant anti inflammatory activity in comparison to aqueous extract and ethyl acetate extract of the same plant and with standard drug diclofenac.

### Key Words

Anti-inflammatory, *Tecomaria capensis*, HRBC membrane.

### Introduction

*Tecomaria capensis* (family: Bignoniaceae) also known as Cape-honeysuckle is a fast growing, scrambling shrub which may grow up to 2-3m high and spread more than 2.5m. *Tecomaria capensis* is an evergreen plant in warm climate areas but loses its leaves in colder areas. It has pinnately compound leaves that have oval leaflets with blunt teeth. Flowering time for this shrub is very erratic and often it flowers all year round. Flowers are orange in color. Plant is used as a traditional medicine to relieve pain and sleeplessness. Dried powdered bark infusions are taken for sleeplessness (Roberts 1990), reported to induce sleep (Hutchings, 1996). It is included in the list of African plants evaluated for in vitro antiplasmodial activity (P. Pillaya, 2008). Inflammation is a local protective response of the body to the tissue injury. Research in the last few decades demonstrated that inflammation is regulated by many pro and anti-inflammatory chemicals mediated such as histamine, prostaglandins (PGE<sub>2</sub> and Prostacyclins), Leukotriene (LTB<sub>4</sub>), Serotonin, Bradykinin, Cytokines (IL-1, IL-6, IL-8, IL-11, TNFα), reactive oxygen species, growth factor, lysosomal enzyme of neutrophils, the extent of

involvement of these chemical mediators varies depending upon the nature of inflammation (Sommer CV, 2006, Chensus Sw, 1996).

### Materials and Methods

#### Plant material

The leaves of *Tecomaria capensis* were collected from Guntur, Andhra Pradesh. It was authenticated by Dr. S. M. Khasim, Department of Botany and Microbiology, Acharya Nagarjuna University, Nagarjuna nagar, Guntur.

#### Preparation of extract

The leaf part of *Tecomaria capensis* was dried at room temperature and grounded into powder and passed through 60# sieve. The powder (500gm) was extracted successively in soxhlet by ethanol, ethyl acetate and water. The sediments were filtered and the filtrate was dried at 400 °C in an oven to get dried product. The different fractions obtained were used for further study. The samples were prepared by suspending the residues in hot water and used for anti-inflammatory study.

#### Screening of anti-inflammatory activity

The anti-inflammatory activity of leaf extract of *Tecomaria capensis* (THUNB) was determined by HRBC membrane stabilization method. Blood was collected from healthy volunteers. The collected

\*Corresponding Author:

tamiljothi.e@gmail.com

blood was mixed with equal volume of (2% dextrose, 0.8% sodium citrate, 0.05% citric acid & 0.42% sodium chloride in water). The blood was centrifuged at 3000 rpm and packed cells were washed with isosaline (0.85%, pH 7.2) & 10% v/v suspension was made with isosaline. The assay mixture contained the drug (concentration as mentioned in Table 1). 1 ml phosphate buffer (0.15M, pH7.4), 2ml of hyposaline (0.36%) 0.5 ml of HRBC suspension. Diclofenac was used as the reference drug. Instead of hyposaline, 2ml of distilled water was used as control. All the assay mixtures were incubated at 37<sup>0</sup>c for 30 minutes and centrifuged. The hemoglobin content in the supernant solution was estimated using colorimeter at 560 nm. The percentage hemolysis was calculated by assuming the haemolysis produced in the presence of distilled water as 100%. The percentage of HRBC membrane stabilization or protection was calculated using the following formula (Gandhidasan, 1991).

$$\% \text{ Protection} = 100 - \frac{\text{Optical density of drug treated sample}}{\text{Optical density of control}} \times 100$$

## Results and Discussion

The lysosomal enzymes released during inflammation produce a variety of disorders. The extra cellular activity of these enzymes is said to be related to acute or chronic inflammation. The non steroidal drugs act either by inhibiting these lysosomal enzymes or by stabilizing the lysosomal membrane (Rajendran Vadivu, 2008). Since HRBC membrane are similar to lysosomal membrane components the prevention of hypotonicity induced HRBC membrane lysis is taken as a measure of antiinflammatory activity of drugs. The results were reported in table 1. It was observed from the table 1 the percentage protection of lysis for Standard Diclofenac 100 µg is 27.203%, Standard Diclofenac 200 µg is 38.972%, Ethyl acetate extract 100 µg is 21.985 %, Ethyl acetate extract 200 µg is 31.765%, Ethanolic extract 100 µg is 33.221%, Ethanolic extract 200 µg is 41.447%, Aqueous extract 100 µg is 13.25%, Aqueous extract 200 µg is 21.112%. The ethanolic extract of *Tecomaria capensis* has significant anti inflammatory activity in comparison to aqueous extract and ethyl acetate extract of the

same plant and with standard drug diclofenac. The anti inflammatory activity of the extracts were concentration dependent, with the increasing concentration the activity is also increased.

## Conclusion

From the above study it was concluded that the ethanolic extract of *Tecomaria capensis* has significant anti inflammatory activity (membrane stabilization property) in comparison to aqueous extract and ethyl acetate extract of the same plant and with standard drug diclofenac. The extracts exhibited membrane stabilization effect by inhibiting hypotonicity induced lysis of erythrocyte membrane. The erythrocyte membrane is analogous to the lysosomal membrane (Chou, 1997) and its stabilization implies that the extract may as well stabilize lysosomal membrane. Stabilization of lysosomal membrane is important in limiting the inflammatory response by preventing the release of lysosomal constituents of activated neutrophil such as bacterial enzymes and proteases which cause further tissue inflammation and damage (Murugasan, 1981).

## Acknowledgement

Authors are thankful to Mr. R. Karthi Keyan, Department of Pharmacognosy, Vignan Pharmacy College, Vadlamudi, Guntur.

## References

1. Chenusu SW, Ward PA. "Inflamation In: Kissane JM". Editor Anderson's Pathology Ed 10<sup>th</sup>, (1996), 387-400.
2. Chou C.T. "The anti inflammatory effect of Tripterygium Wilfordihook on adjuvant induced paw edema in rats and inflammatory mediators release". Phytother Res 11 (1997), 152-54.
3. Gandhidasan, R. "Anti-inflammatory action of Lannea coromandelica by HRBC membrane stabilisation". Fitoterapia 12 (1991), 81-83.
4. Hutchings, A., Scott, A.H., Lewis, G., Cunningham, A.B., Zulu Medicinal Plants: An Inventory. University of Natal Press, Pietermaritzburg, (1996).
5. Murugasan. N, Vember, S, Damodharan, C. Studies on erythrocyte membrane IV. "In vitro haemolytic activity of Oleander extract". Toxicol Lett, 8 (1981), 33-38.

6. P. Pillaya, V.J. Maharaj, P.J. Smith, Journal of Ethnopharmacology, 118 (2008), 438–454.
7. Rajendran Vadivu, Lakshmi K.S. “In vitro and in vivo anti inflammatory activity of leaves of *Symplocos cochinchinensis* (Lour) Moore ssp *Laurina*”. Bangladesh J Pharmacol, 3 (2008), 121-124.
8. Roberts, M., “Indigenous Healing Plants”. Halfway House. Southern Book Publishers, 1990.
9. Sommer CV, Parth CM. Inflammation, tissue repair and fever. In: Parth CM. Essentials of pathophysiology-Concepts of Altered health Sciences 3rd edition. New York. Lippincott Williams and Wilkins, (2006), 495-514.

**Table 1:** Anti inflammatory activity of *Tecomaria Capensis* at various concentration and extracts.

S.No	Group	Concentration µg/ ml	Activity (Prevention of lysis in %)
1.	Standard Diclofenac	100	27.20%
2.	Standard Diclofenac	200	38.97%
3.	Ethyl acetate extract	100	21.99%
4.	Ethyl acetate extract	200	31.77%
5.	Ethanollic extract	100	33.22%
6.	Ethanollic extract	200	41.45%
7.	Aqueous extract	100	13.25%
8.	Aqueous extract	200	21.11%

\*\*\*\*\*