Asian Journal of Chemistry Vol. 19, No. 2 (2007), 1597-1598

NOTE

Effect of Alcoholic Extract of Bark of *Terminalia arjuna* (Roxb. ex. DC) on Mast Cell Degranulation

M.V.V. PRASAD*, K. BALAKRISHNA† and M. WILLIAM CAREY‡
Sree Vidyanikethan College of Pharmacy, A. Rangampet, Via Tirupati-517 102, India
Tel: (91)9440425275; E-mail: vvmedapati@yahoo.co.in

The effect of the alcoholic extract of the bark of *Terminalia arjuna* on mast cell degranulation (*in vitro* study) was carried out by the modification method of Kaley and Weiner. Under the experimental conditions about 24 % of mast cells are normally degranulated. The mast cell degranulator, compound 48/80 (*p*-methoxy-N-methyl phenethylamine) produced about 57 % of degranulation. Pretreatment with alcoholic extract of *Terminalia arjuna* had shown a significant protection against the degranulation induced by compound 48/80. The protection was also evidenced by pretreatment with disodium chromoglycate a potent mast cell stabilizing agent.

Key Words: *Terminalia arjuna*, Disodium chromoglycate, Mast cell degranulation, Compound 48/80.

Terminalia arjuna (Roxb. ex. DC)[1-4] is known as Arjun in Sanskrit and is used in the indigenous system of medicine. The bark of the plant is used in the treatment of cough, asthma, bronchitis and other chest ailments. Hence it was decided to investigate the anti-asthmatic activity of the alcoholic extract of the bark of the plant by conducting the mast cell stabilizing effect. The alcoholic extract of the bark was chosen for the investigations, since the extract did not contain any alkaloids.

All the chemicals used were of analytical grade obtained from S.D. Fine Chemicals, Mumbai. The stem bark of the plant was collected from the periphery of Chennai and was authenticated by Dr. E. Sasikala, Asst. Research Officer, Central Research Institute for Siddha, Chennai. The raw bark was cut into pieces shade dried and then pulverized in a mill to a coarse powder.

The effect of the alcoholic extract on mast cell degranulation (*in-vitro*) was carried by the modification method of Kaley & Weiner[5] and May *et al.*[6]. Male albino rats were sacrificed and the mesentery was carefully removed from the intestinal attachment and cut into small bits of about 1 cm^2 each. The bits were incubated in tyrode solution. The drug at different

†Central Research Institute for Siddha, Arumbakkam, Chennai-600 106.
‡S.G.R.P. Government Polytechnic Kurnool-518 002, India.

dose levels was added to the mast cell incubates and after 10 min the mast cell degranulator, compound 48/80 (*p*-methoxy-N-methyl phenethylamine) with formaldehyde in the dose of 10 μg/mL was added and the incubation was continued further 10 min. The bits were removed carefully, washed with tyrode solution and spread over glass slides. The mast cells were stained with 1.0 % solution of toludine-blue in 70 % alcohol for 2 min and counter stained with 0.1 % solution of Light green in distilled water and the slides were dried. The mast cells were counted under high power objective field. Disodium chromoglycate, a potent mast cell stabilizing agent in dose of 10 μg/mL was also used in the study for comparison. The effect of the drug was studied in separate mesenteric bits and percentage degranulation was recorded.

As shown in Table-1 about 24 % of mast cells are normally degranulated under the experimental conditions. Addition of alcoholic extract of *Terminalia arjuna* did not change the normal patterns of degranulation. The mast cell degranulator compound 48/80 (*p*-methoxy-N-methyl phenethylamine) produced about 57 % of degranulation. A significant protection was observed in the concentrations of 25 to 50 μg/mL when pretreated with the alcoholic extract of *Terminalia arjuna*. The alcoholic extract of *Terminalia arjuna* bark tested for mast cell stabilizing effect had shown positive results confirmed the claims in the literature.

TABLE-1
EFFECT OF THE ALCOHOLIC EXTRACT ON MAST CELL DEGRANULATION

Pretreatment	Conc. (μg/mL)	Treatment	Conc. (μg/mL)	Deregulation (%)
Vehicle	--	Vehicle	--	24.12 ± 2.82
Vehicle	--	alc. Extract	50	24.92 ± 1.92
Vehicle	--	Comp. 48/80	10	57.32 ± 3.81
alc. Extract	05	Comp. 48/80	10	58.64 ± 3.61
alc. Extract	10	Comp. 48/80	10	49.82 ± 4.02
alc. Extract	25	Comp. 48/80	10	23.42 ± 1.56*
alc. Extract	50	Comp. 48/80	10	23.18 ± 2.08*

Each value represent the mean ± SEM of six observations, *$p < 0.01$

REFERENCES

1. R.N. Chopra, S.L. Nayar and I.C. Chopra, Glossary of Indian Medicinal Plants, CSIR, New Delhi, India, p. 251 (1956).
2. K.M. Nadkarni and A.M. Nadkarni, India Materia Medica, Popular Pakistan Pvt. Ltd., Bombay, India, Vol.1, p. 1198 (1976).
3. P.N.V. Kurup, V.N.K. Ramadas and P. Joshi, Hand Book of Medicinal Plants, Central Council for Research in Ayurveda and Siddha, New Delhi, India, p. 13 (1979).
4. P.K. Warrier, V.P.K. Nambiar and C. Raman Kutty, Indian Medicinal Plants, Orient Longman Ltd., Hyderabad, India, Vol. 5, p. 253 (1994).
5. G. Kaley and R. Weiner, in edn.: P. Ramwell and J.J.E. Shaw, Annals of Aacademic Science, A.C. Press, New York, Vol. 180, p. 137 (1971).

(*Received*: 22 November 2005; *Accepted*: 20 September 2006) AJC-5142