WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.074
Volume 7, Issue 11, 899-904. Research Article ISSN 2277– 7105

PHARMACOLOGICAL EVALUATION OF STYPTIC ACTIVITY OF MOOLAROGA CHOORANAM FOR THE TREATMENT OF BLEEDING PILES

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Article Received on
12 April 2018,

Revised on 02 April 2018,
Accepted on 23 May 2018,

DOI: 10.20959/wjpr201811-12439

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ABSTRACT

Varicosities of haemorrhoidal veins called Haemorrhoids or Piles is referred as Moola noi in traditional Siddha system of medicine which is one of ancient traditional medicinal system originated in South India. There are 21 types of Piles is described in Siddha Literature. One among them is Rattha Moolam i.e. Bleeding piles. Bleeding piles is often described as 1st degree internal haemorrhoids. The aim of the present study is to evaluate the potency of the Siddha herbal formulation *Moolaroga chooranam* to stop bleeding through prolongation of bleeding, clotting and prothrombin time. The study was conducted at Centre for Lab animal Technology and Research, Sathyabama University, Chennai. Wistar albino male rats were used for the study. The animals were grouped into four groups of 6 animals each. Group I (Control group) -received normal saline 5ml/kg, Group II – Aspirin control received 5mg/kg of aspirin, p.o. for 35 days. Group III - Received Aspirin (5mg/kg) for 21 days and then treated with 200mg/kg *Moolaroga chooranam*, p.o one hour prior to Aspirin administration from day 22 to 35. Group IV - Received Aspirin (5mg/kg) for 21 days and then treated with 400mg/kg *Moolaroga chooranam*, p.o one hour prior to Aspirin administration from day 22 to 35. There was significant change in bleeding, clotting and prothrombin time.

KEYWORDS: Bleeding piles, Styptic activity, Moolaroga chooranam, Aspirin.

INTRODUCTION

Piles means a ball or mass, Haemorhoids means blood to ooze. It is abnormal sliding downwards of anal cushions due to straining or other causes.[1] Haemorrhoids or piles are the

varicosities of the haemorrhoidal veins. They are called internal piles if the dilatation is of superior haemorrhoidal plexus covered by mucus membrane and external piles if they involve inferior haemorrhoidal plexus covered by skin. Microscopically, thin walled and dilated tortuous veins are seen under the rectal mucosa (internal piles) or anal skin (external piles).[2]

Haemorrhoids if untreated can pose serious medical problems and can also be a symptom of bigger problem. Its incidence can be seen at any age and in both genders equally. It is estimated that 50-85 % of people around the world had haemorrhoids. In India 75% of the population was affected.[3]

According to recent studies, causes for haemorrhoids are repeated long driving, erect posture, low fibrous diet, chronic constipation and diarrhoea, straining during defecation, heredity, eating spicy foods, sitting on cold seats and benches, doing manual labour, lifting heavy weights, being overweight, pregnancy, weakening of the connective tissue in the rectum and anus that occurs with age.[4] Ancient Siddha literature has also quoted about the aetiology of haemorrhoids which are eating heat, sexual extravagance, spicy and sour foods, selfishness, angry, mental illness.[5] Medicine in Siddha System is divided into two broad categories i.e internal and external medicines. They are further into 32 types each. *Moolaroga Chooranam* is a powdered form of drug which belongs to the internal medicine category. *Moolaroga chooranam* is mentioned in Siddha Literature *Pulipani Vaithiyam 500*. The drug is indicated for the treatment of haemorrhoids.

MATERIALS AND METHODS

Details regarding sample

Table 1: Ingredients of the drug *Moolaroga chooranam*.

S.no	Tamil name	Botanical Name	Family
1	Thuthuvalai	*Solanum trilobatum*	Solanaceae
2	Marul kizhangu	*Sansevieria roxbhurghiana*	Liliaceae
3.	Karunai	*Amorphophallus paeonifolius*	Araceae
4.	Pirandai	*Cissus quadrangularis*	Vitaceae
5.	Nilavarai	*Cassia senna*	Caeselpinoideae
6.	Kaattu karunai	*Amorphophallus syvaticus*	Araceae
7.	Arugan	*Cynodon dactylon*	Poaceae
8.	Neermulli	*Hygrophila auriculata*	Acanthaceae
9.	Milagaranai	*Toddalia asiatica*	Rutaceae

Drug collection and authentication

All the ingredients of the sample drug are collected from its growing places. The ingredients

of the drug are authenticated at Department of Botany, Govt. Siddha Medical College, Chennai.

Details regarding experiment

IAEC Approval and conduct of the study

The study was duly approved by Institutional Animal Ethical Committee. IAEC approval number is SU/CLATR/IAEC/VII/045/2016. Pharmacological evaluation of *Moolaroga chooranam* for Styptic activity was done at Centre for Lab animal Technology and Research, Sathyabama University, Chennai.

Animals

Healthy adult Wistar albino male rats weighing between 200-220 g were used for the study. The animals were housed in poly propylene cages and were kept in well ventilated with 100% fresh air by air handling unit. A 12 light / dark cycle were maintained. Room temperature was maintained between 22 $\pm$ 2^{o} C and relative humidity 50–65%. They were provided with food (Sai feeds, Bangalore, India) and water *ad libitum*. All the animals were acclimatized to the laboratory for 7 days prior to the start of the study.

Experimental Methodology

The animals were grouped into four groups of 6 animals each. Group I (Control group) - received normal saline 5ml/kg, Group II – Aspirin control received 5mg/kg of aspirin, p.o. for 35 days. Group III - Received Aspirin (5mg/kg) for 21 days and then treated with 200mg/kg *Moolaroga chooranam*, p.o one hour prior to Aspirin administration from day 22 to 35. Group IV - Received Aspirin (5mg/kg) for 21 days and then treated with 400mg/kg *Moolaroga chooranam*, p.o one hour prior to Aspirin administration from day 22 to 35.

Bleeding time prolongation in rats

Oral administration of Aspirin (5mg/kg), p.o for 21 days will cause significant change in the mean bleeding and clotting times.[6]

Determination of Bleeding Time

At the end of 35th day bleeding time was evaluated. The tail of the rat was warmed for 1min in water at 40°C and then dried. A small cut was made in tail tip with a scalpel. Bleeding time start and was noted when the first drop touched the circular filter paper and checked at 15 sec intervals until bleeding stops.

Determination of Clotting Time

Clotting time was determined by capillary tube method. Capillary tube was filled with rat blood collected through retro orbital sinus puncture. Tube was broken in to small piece for every 15 sec. As soon as threads of fibrin were noticed, the stopwatch was stopped and the time recorded as the clotting time for that particular rat.

Prothrombin time (PT)

0.1 ml of plasma was mixed with 0.2 ml of PT reagent (Calcium thromboplastin) and then the reaction mixture was incubated at 37^{o}C, and was absorbed until formation of the fibrin clot[7]

RESULTS AND DISCUSSION

Table 2: Effect of *Moolaroga chooranam* on Aspirin induced bleeding time, Clotting time and Prothrombin time prolongation in rats.

Group I	**Bleeding Time in Sec**	**Clotting Time in Sec**	**Prothrombin time in Sec**
Mean	142.5	125	9.167
Std. Deviation	31.1	15.49	1.169
Std. Error	12.7	6.325	0.4773
Group II	**Bleeding Time in Sec**	**Clotting Time in Sec**	**Prothrombin time in Sec**
Mean	395	417.5	16.17
Std. Deviation	24.49	22.08	1.602
Std. Error	10	9.014	0.654
Group III	**Bleeding Time in Sec**	**Clotting Time in Sec**	**Prothrombin time in Sec**
Mean	312.5	335	12.5
Std. Deviation	17.54	18.17	1.225
Std. Error	7.159	7.416	0.5
Group IV	**Bleeding Time in Sec**	**Clotting Time in Sec**	**Prothrombin time in Sec**
Mean	217.5	277.5	11.67
Std. Deviation	15.73	22.75	1.506
Std. Error	6.423	9.287	0.6146

Table 3: Mean±S.D.

Group of animals	**Bleeding time**	**Clotting time**	**Prothrombin time**
Group I	142.5±31.1	125±15.49	9.167±1.169
Group II	395±24.49**	417.5±22.08**	16.17±1.602**
Group III	312.5±17.54**	335±18.17**	12.5±1.225**
Group IV	217.5±15.73**	277±22.5**	11.67±1.506**

Values were expressed as mean±S.D for N=6 rats in each group one way ANOVA followed by Dunnet's test. *P<0.05, **P<0.01, which indicates that the result is significant.

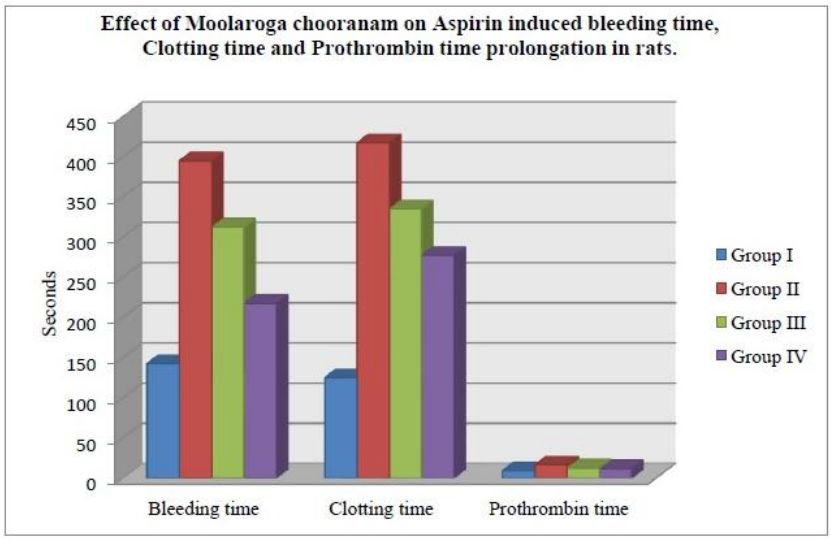

Figure 1: Effect of Moolaroga chooranam on aspirin induced prolongation of bleeding time clotting time and prothrombin time in rats.

Prolongation of bleeding, clotting and prothrombin time is determined for the evaluation of styptic activity. One way ANOVA followed by Dunnet test on each group shown that there is significant decrease in the prolongation of bleeding, clotting and prothrombin time in Test group III and IV which received 200 and 400 mg/kg of the trial drug compared to Group II which received 5 mg/kg of aspirin. Styptic activity of the drug may be due to which most of the ingredients of *Moolaroga chooranam* are having astringent property. Rich tannins present in plants gives astringent property to them because tannins are astringent.[8]

CONCLUSION

From the study it is evident that the drug *Moolaroga chooranam* has significant styptic activity as its P value is <0.05 and <0.01. As bleeding is the cordial symptom in bleeding piles the drug *Moolaroga chooranam* having good styptic activity can stop bleeding and give good prognosis along with the trial drug supportive therapies like diet and changing of their lifestyles may control the disease.

ACKNOWLEDGMENTS

Authors would like to express their thanks to Centre for Lab animal Technology and Research, Sathyabama University and all the faculties of Maruthuvam Dept, Govt Siddha Medical College, Chennai.

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