Journal for Research in Applied Sciences and Biotechnology

www.jrasb.com

ISSN: 2583-4053

Volume-2 Issue-2 || April 2023 || PP. 115-117

https://doi.org/10.55544/jrasb.2.2.16

Evaluation of the Effect of *Tagetes erecta* Leaves Hydroalcoholic Extract on Blood Clotting Time

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www.jrasb.com || Vol. 2 No. 2 (2023): April Issue

Received: 21-03-2023	**Revised:** 11-04-2023	**Accepted:** 21-04-2023

ABSTRACT

People were afflicted with a variety of illnesses prior to the revolution, and there was no access to medications sufficiently, at that time herbal agents fulfilled the demand for medications. In these modern days due to the huge side effects as well as drug resistance of marketed drugs, the demand for herbal medicines is increasing.

We are all busy in our lives these days, we are traveling here and there to maintain our social duties. Due to this, the number of accidents is increasing around us.

When a blood vessel is injured, blood clotting, or coagulation, is a crucial process that reduces excessive bleeding. So, the drugs that are able to reduce clotting time are essential for us.

In this research we evaluated the blood clotting effect of two different doses (250mg/kg and 500mg/kg) of *Tagetes erecta* leaves hydroalcoholic extract on the albino wistar rat, and compared the effect with a marketed standard drug Tranexamic Acid (Pause 500 mg).

Keywords- *Tagetes erecta*, hydro alcoholic extract, Tranexamic Acid, blood clotting time.

I. INTRODUCTION

As we know that 'life' is another name for water, in the same way, we human beings are running through and through with plants in our everyday life. Not only we but the other animals also pervasively depend upon these god-gifted things that are plants [1].

Since ancient times, people have used plants as medicines. This use has great importance, because plants can provide drugs to widen the therapeutic arsenal. Earlier due to lack of knowledge of the reasons of illness or proper evidence of the medicinal properties of a plant, cure attempts were mainly based on experience. According to WHO, medicinal plants are the best sources to obtain a variety of new herbal drugs. About 80% of individuals from developing countries use traditional medicine, which has compounds derived from medicinal plants [2,3,4,5].

The use of medicinal plants for healing is as old as humanity itself. When a blood vessel is injured, coagulation, or blood clotting, plays a crucial role in limiting the amount of bleeding that occurs. Your plasma, which is the liquid component of your blood, contains proteins and platelets, which work together to

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stop the bleeding by developing a clot over the wound. After the injury has healed, your body will simply dissolve the blood clot [6].

Consequently, the body employs control mechanisms to prevent excessive clotting as well as dissolve unwanted clots. This is essential because too much clotting can block those blood vessels that are not responsible for bleeding and insufficient clotting cause excessive bleeding from minor injury.

Any aspect of the clotting or bleeding control system that is abnormal can result in extremely high levels of either clotting or bleeding. When clotting is inadequate, even a minor blood vessel injury can result in significant blood loss. Small blood vessels in crucial locations may become blocked by clots when clotting is excessive. Strokes may be caused by blocked brain vessels, and heart attacks can be triggered by blocked heart vessels. Pieces of clots from veins in the legs, pelvis, or abdomen can travel through the bloodstream to the lungs and block major arteries there (pulmonary embolism) [6,7].

There is ample proof that man and his or her search for medicines in nature go back a very long way, including written records, preserved monuments, and even the original plant medicines. Because of man's long history of fights with disease, he has learned to find drugs in the bark, seeds, fruit bodies, and other parts of plants. As a result, he is now aware of the use of medicinal plants. As a result, knowledge and ideas about the use of medicinal plant, enhanced the ability of pharmacists and doctors to respond to challenges that have developed with the spread of professional services in the assistance of man's life.

II. MATERIALS AND METHOD

2.1 Animals:

Male Albino Wistar rats weighing between 100-120g were used throughout the experiment. Animals were maintained under standard conditions in an animal house under 12 hours of alternate light and dark cycle.

2.2 Plant materials:

The leaves of *Tagetes erecta* were collected from local area of our college Netaji Subhas Chandra Bose Institute of Pharmacy. Leaves were cleaned with water then kept them under the shade for drying. Then cold percolation was performed with 70% hydroalcoholic solution for 48 hours to prepare the extract. After that extract was collected and kept it to evaporate. After evaporation the extract was stored.

2.3 Retro orbital model: [6,8]

Total 18 animals were taken. The animals were then divided into three groups

Group 1 was named as “Control” and was untreated.

Group 2 was named as “standard”. Animals were treated with drug 50mg/kg “Pause 500 mg (Tranexamic Acid),” by oral route

Group 3 was named as “test I” and animals were treated with 250mg/kg dose of *Tagetes erecta* leaf extract by oral route.

Group 3 was named as “test II” and animals were treated with 500 mg/kg dose of *Tagetes erecta* leaf extract by oral route.

Firstly, anesthetization of animals was done using ketamine (40 mg/kg) and Xylazine (10 mg/kg) of rat bodyweight. Then using the dominant hand, a capillary was inserted at a 30° angle to the nose in the medial canthus of the eye. To enter the sinus/plexus, just a little bit of thumb pressure was applied to pierce the tissue. Once the sinus or plexus was punctured, blood began to flow through the capillary tube. After collecting the required amount of blood, the capillary tube was carefully taken out and wiped the eye using sterile cotton to prevent additional bleeding. Then a small portion of the blood-filled capillary was broken at every 15-second intervals till the formation of a blood clotting thread and the time was noted.

III. RESULT AND DISCUSSION

Table 1: Effect hydroalcoholic extract of leaves of *Tagetes erecta* on blood clotting time.

Animal groups	Average Clotting Time (second)
Control	117.5
Test 1 (250mg/kg)	110
Test 2 (500mg/kg)	95
Standard (50mg/kg)	55

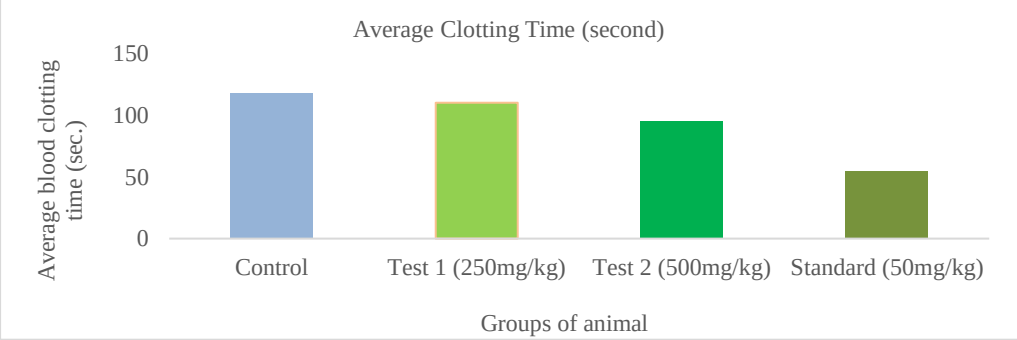

Figure 1: Effect hydroalcoholic extract of leaves of *Tagetes erecta* on blood clotting time.

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As the animals are subjected to the blood clotting experiment, the control group showed that the normal average blood clotting time of the in vitro study of the retro-orbital method was 117.5 seconds. The average clotting time for the standard group (tranexamic acid 50 mg/kg) was 55 seconds. The test group I showed the effect of *Tagetes erecta* (250mg/kg) on the average blood clotting time was 70 seconds. The test group II Tagetes erecta (500 mg/kg) showed an average blood clotting time of 95 seconds, that was almost same value compared to the standard. Here in this study, it can be determined that the effect of *Tagetes erecta* Linn extract having the component of blood clotting.

IV. CONCLUSION

In the experiment it was obvious that *Tagetes erecta* Linn extract has potent effect on the rat's blood clotting. The extract produced near about same clotting time, compared to the standard drug. But the main active component of extract that was responsible for this result that is unknown. For this further study was needed to demonstrate the active component and the chemical structure.

ACKNOWLEDGEMENT

We are thankful to our principal sir of Netaji Subhas Chandra Bose Institute of Pharmacy for his guidance. We also thankful to our family members for their support.

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