

Investigation and Preparation of Polyherbal Ointment for Arthritis

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ABSTRACT

The process of inflammation and the arthritis was induced due to the immune system problems in elderly patients. They are encountering problems with the immune system which identifies the own body as a foreign system and acts against it. This causes inflammation in the joints and therefore causing pain and swelling in the joints. This immunity lowering drugs are the major classes of drugs that will affect the human body by lowering the immunity, and the side effects are caused by the opportunistic infections that occur when the body has low immunity. These effects are now dangerous, and the drugs that treat arthritis are now considered deadly, and their use is minimized too. In this respect, the herbs are found to be the best sources of the treatment of arthritis that produce the chemical constituents that target and cure inflammation that causes arthritis. The plant extract was used to incorporate into the ointment, and this was investigated for the anti-arthritic activity. This was compared to the activity of the extract and standard drug. The ointment that was prepared showed a significantly better activity compared with the standard drug.



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INTRODUCTION

The process of inflammation and the arthritis was induced due to the immune system problems in elderly patients. They are encountering problems with the immune system which identifies the own body as a foreign system and acts against it. This causes inflammation in the joints and therefore causing pain and swelling in the joints [1]. This leads to severe damage in the joints that leads to the damage in the cartilage of the joints in the body. There

are few diseases in the body that is affected due to arthritis and inflammation they are mainly respiratory system which was called pleuritis and the inflammation to the sclera was called as the scleritis and likewise. Other factors are responsible for arthritis. They are genetic too. Because of the history of arthritis in the family earlier, the person may suffer from the inflammation caused due to the immunity problem [2].

But around the globe, some almost 5 crore people have arthritis currently. There had been all the ages of the people, but intensively the people between

40-60 suffer a lot from arthritis. In general, women get affected due to arthritis more than men. These differences are due to the differences in the immune system, and so there are generally anti-immune or immune suppressants administered for the treatment of arthritis [3].

These immunity lowering drugs are the major classes of drugs that will affect the human body by lowering the immunity, and the side effects are caused by the opportunistic infections that occur when the body has low immunity. These effects are now dangerous, and the drugs that treat arthritis are now considered deadly, and their use is minimized too. In this respect, the herbs are found to be the best sources of the treatment of arthritis that produce the chemical constituents that target and cure inflammation that causes arthritis [4].

This work is a protocol generated to prepare the herbal ointment, which is incorporated with the extracts of *Samanea Saman (Jacq)*. The plant was already investigated for the antioxidant activity and having this in mind; the plant was proceeded to prepare the anti-arthritis activity [5] which was investigated for the anti-arthritis activity of the ointment.

Preparation of ointment

Shoots the plant is dried under shade for three days, and the dried shoots were powder using a ball mill, and the powder was passed through the sieve. This powder was used to extract chemical constituents using the solvent distilled water in the maceration process. 100g of the powder was macerated with 200ml of distilled water for five days, and then the solution was filtered. The filtrate was then evaporated using a water bath, and then the crude extract this was stored in a desiccator. The percentage yield of the extract was found to be 18.9% of the weight to weight of the drug.

The ointment base that is used for preparing the ointment was paraffin and beeswax ointment base which was in the ratio of 1:2 of the paraffin and wax. 100g of the ointment base was mixed with 1g of

menthol which was used as rubefacient and 1g of the extract was incorporated into the ointment base.

Invivo anti-arthritis activity

Animals that are used to investigate the activity were Sprague Rats which weigh around 145-165gms. They were kept in the cages for about two days in the lab for acclimatization which were allowed to the proper food pellets and water also. The animal experiments were performed according to the guidelines proposed by the animal ethics committee. Freund's Adjuvant arthritis induction method was used to investigate the arthritis activity of the animals [6]. The rats were separated into 5 groups of animals with a number of 5 in each group. The drug administration is as follows.

Group-I

Normal rat group-this group was given Carboxy MC at 1%w/v solution in normal saline. Freund's Adjuvant is a suspension of Mycobacterium that is suspended in the paraffin at a concentration of 10mg in each ml, and it was administered to the plantar region of the rats on both sides.

Group-II

Freund's adjuvant solution was given to the rats, and the drugs are not given.

Group-III

Induction of the arthritis was given to the rats, and the standard drug Indomethacin was presented at the dose was 15mg/kg

Group-IV

The extract was administered at a dose of 250mg/kg along with induction of the arthritis

Group-V

The prepared ointment was massaged in the area of the induction of the arthritis joints.

The animals were induced for the arthritis was noted for the increase in the paw volume compared to the normal group of rats. The increase in the volumes was noted using the screw gauge. The recordings were noted and tabulated for comparison. The blood was withdrawn from the carotid plexus of the rats after anaesthetizing the rats with ether. The blood which was withdrawn from the rats was tested for the blood profile for RBC, WBC, ESR and Hb [7].

RESULT AND DISCUSSION

The values were tabulated, and the anti-arthritis activity was estimated by calculating the increasing the paw volumes and other blood profile of the rats.

Table 1: Anti-arthritic activity of ointment

| Animals group | Rat paw oedema | | | | Inhibition |
|--------------------|------------------|--------------------|--------------------|--------------------|------------|
| | 0-day | 7-day | 15-day | 21-day | |
| Distilled water | 0.245+0. 1742 | 0.251+0. 0163 | 0.234+0. 0189 | 0.267+0. 0152 | — |
| Induced group | 0.263+0. 1958 | 0.845+0. 0532** | 0.821+0. 0293** | 0.759+0. 0225** | — |
| Indomethacin group | 0.317+0. 0294 | 0.632+0. 0714** | 0.514+0. 0642** | 0.638+0. 0803** | 57.27 |
| Extract-250mg/kg | 0.359+0. 0510 | 0.763+0. 0385** | 0.692+0. 0478** | 0.581+0. 0516** | 43.62 |
| Herbal ointment | 0.281+0. 0402 | 0.87+0.0 214** | 0.586+0. 0729** | 0.625+0. 0357** | 46.24 |

Table 2: Effect of ointment on the rats blood profile

| Group | RBC in terms of 10 ⁶ cells/mm ³ | WBC in terms of 10 ³ cells/mm ³ | Hb in terms of gm % | ESR in terms of mm/hr |
|--------------------|--|--|------------------------|--------------------------|
| Induced group | 10.15±0.724** | 12.06±0.084** | 13.67±0.092** | 9.35±0.173** |
| Indomethacin group | 9.07±0.078** | 11.08±0.163** | 16.3±0.145** | 7.14±0.182** |
| Extract-250mg/kg | 8.43±0.091** | 13.19±0.152** | 14.28±0.101** | 8.16±0.168** |
| Herbal ointment | 11.24±0.116** | 12.65±0.090** | 15.12±0.324** | 7.01±0.125** |

There was a significant increase in the volume of the paws of the rats. The paw volumes were elevated in the groups that are treated with the inducing agent but not the other groups. The ointment prepared were investigated for the activity, and the result showed a better activity of the extract and the ointment.

The extract at 250mg/kg showed a better activity compared to the standard drug but is lesser compared to the formulation that is a herbal ointment. The inhibition that was calculated was also under the value of the ointment only. Therefore, it was confirmed that the ointment that was prepared showed significant activity in comparison to the extract and standard. The blood profile parameters like RBC, WBC etc. were also in confirmation and in line with the results that were achieved with the paw volumes.

The increase in the paw volume of the rats was due to the bacteria, and the result was due to the induction of arthritis, which resulted in the inflammation and pain in the joints. This was involved due to the immunity of the body that caused arthritis [8]. This was the reason for the joint inflammation and the joint deformity that was visible from the surface of the skin. The increase in the blood constituents like RBC and WBC is elevated due to the induction of inflammation [9] that was lowered with the treat-

ment with extract and ointment too. There was an inflammatory process involved in the causing of arthritis p [10], [11], [12] This was a prostaglandin and interleukin mechanism [13].

CONCLUSIONS

The plant extract was used to incorporate into the ointment, and this was investigated for the anti-arthritic activity. This was compared to the activity of the extract and standard drug. The ointment that was prepared showed a significantly better activity compared with the standard drug.

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Conflict of Interest

Nil.

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