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Preparation and screening of polyherbal capsules (capsule-l pyrex) for antipyretic activity

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ABSTRACT

Pyrexia is the most common symptom and a sign of any inflammation and infectious response in the body. Inflammation causes the rise in inflammation and pain mediators int eh body which causes the elevation in the body temperature, which is called Fever or pyrexia. Herbs have been used in the many medical systems by considering the potential therapeutic benefits and potential to treat many diseases. There had been a phase wherein all the Indian medical systems used only herbal medicines before the advent of synthetic drugs in the late 1700s. The herbs had been used as sources to treat many diseases, including fevers. These herbs are being the sources of many lead molecules and potent chemical constituents. Despite the evolution of synthetic drugs, herbal medicines have been used as drugs of choice for CHF and more diseases.

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INTRODUCTION

Pyrexia is the most common symptom and a sign of any inflammation and infectious response in the body. Inflammation causes the rise in inflammation and pain mediators int eh body which causes the elevation in the body temperature, which is called as Fever or pyrexia [1]. NSAID are the class of drugs that are used to treat inflammations and fevers. They are very effective to date and also have known to some side effects that affect the gastric system. Gastrointestinal bleeding, Gastric perforations and other obstruction are commonest of them [2]. Few other drugs inhibit COX enzyme that is used to relieve from fevers and inflammations.

They are known to cause adverse effects for some other organs like the heart and cardiovascular system. They are responsible for causing the congestive heart disease [3, 4].

Some antibiotics treat the infections to fight the microorganisms that cause diseases and lead to Fever and inflammation. They cause some side effects like addiction, antibiotic resistance and physiological stress. Once this happens, the drugs will no longer work best for fevers, and the organisms will gain resistance to the drugs [5, 6]. Herbs have been used in the many medical systems by considering the potential therapeutic benefits and potential to treat many diseases. There had been a phase wherein all the Indian medical systems used only herbal medicines before the advent of synthetic drugs in the late 1700s. The herbs had been used as sources to treat many diseases, including fevers [7] These herbs are being the sources of many lead molecules and potent chemical constituents. Despite the evolution of synthetic drugs, herbal medicines have been used as drugs of choice for CHF and more diseases [8] .

Out of all the plants, Leucas Clarki had already been investigated and proven for the antipyretic activity and published the same [9] . Considering this, the antipyretic activity was used to prepare antipyretic capsules with the extract and investigate the formulation for the antipyretic activity comparing to the standard drug and a marketed formulation. The extract was combined with t piper longum powder too, and the mixture was capsulated and investigated.

EXPERIMENTAL DIVISION

Collection

The herb of Leucas was identified in the local farm area of the native. The herbarium specimen was prepared, and the same was preserved into the library in the college. The plant material was dried in an oven at standard temperature, and the dried parts were powdered using a blender and finely powdered. This fine powder was extracted using 75% v/v ethanol using cold percolation process. The percolator was filled with the bag sealed with the powder, and then ethanol solution was then let to percolate through the drug. After three days of percolation, the solution was filtered, and the filtrate was taken and evaporated on the water bath. This resulted in a thick paste-like consistency of the extract. The extract that is resulted was a dark brown and green colour.

Piper longum fruits powder was bought from the store, and the powder was sieved to obtain a fine powder. This powder was directly used in the experiments.

Preparation of capsules

Weighed amounts of the extract were taken and mixed with a weighed quantity of the piper longum powder. This was mixed with the starch according to table 1. The powder mixture was filled in the hard gelatin caps of zero size.

Activity comparison

Albino rats are used in the experiments which weight around 135-155gm. The acclimatization and the feeding were performed by following the CPCSEA guidelines for experimentation on animals. The rats were allowed to access the food and water freely. The pyrexia was induced by the brewer's yeast method using 20%w/v solution of brewers yeast, which is suspended in 2%acetic acids [9] . The rats were injected with the solution intraperitoneally and waited for induction of the Fever. Before this, the baseline temperature was noted using a digital meter via the rectal route. The animals were allowed to rest for the induction of Fever for 18hrs [10] . They were rechecked for the rectal temperature after that incubation period. The gain in the temperature was above 0.6 for all the animals, and they were selected for further study.

METHOD

The rats were divided into 4groups which were segregated as six animals in each group. Group one was administered with 0.9 % w/v uhyjjjjof normal saline solution, and this group was left as the negative control group. The second group was given a standard drug of paracetamol at 150mg/kg [11] of the rats. Third group and fourth group were assigned the marketed formulation and the prepared polyherbal capsules at the dose of 100mg/kg of the rats. The rectal temperature was recorded, and the readings were noted and tabulated.

RESULTS & DISCUSSION

The polyherbal capsules that are prepared weighed around 650-670gm each which contained 200mg of extract in each capsule along with 100mg of the piper fruit powder. Starch is used as a glidant in the capsule. The mixture had an acceptable colour and odour. This was compared with the marketed capsules which were used to treat pyrosis.

The polyherbal capsules that were prepared in the investigation are tested for the Fever caused by yeast, and this was treated as infection-related Fever

Table 1: Preparation of CAPSULES-L-PYREX

Sl.no	Materials	Quantities
1	Leucas Ethanol extract	200mg
2	Piper longum powder	100mg
3	Starch	350mg

Table 2: Activity of CAPSULES-L-PYREX

Group	Rect Temp0c	Rect temp after dose			
		30mins	1hr	2hr	4hr
Saline	41.83±0.64	45.67±0.93	43.59±1.06	44.91±0.78	46.12±1.25
Para-c	40.92±1.13	43.18±0.75	45.63±1.32	42.54±0.46	41.84±0.84
Marketed formulation 100mg/kg	41.53±1.87	44.84±1.48	42.42±0.97	41.76±1.34	40.61±0.71*
CAPSULES-L-PYREX 100mg/kg	43.12±0.96	46.31±0.62	41.76±1.15	42.49±1.59	40.83±0.43*

which is common in most of the cases. There is also some inflammation related to the Fever in this case due to the reason that the paracetamol was used as standard drug. The prepared formulation significantly lowered the rectal temperature 98C.

and the lowering was almost 20 % of the elevated temperature. This was brought back to normal in three groups. Still, there was a significant difference in the time duration, which had made the polyherbal capsules significant. Paracetamol lowered the temperature in 2hrs, and the marketed formulation started to lower the temperature in 4 hrs time. The polyherbal capsules that are prepared lowered the temperature starting at 2 hrs and the lowering was a peak. Instantly the animal rectal temperature significantly lowered in comparison to the other groups [12] (Tables 1 and 2).

In the fact that this is infection-related Fever, it is known to cause the inflammation due to the elevation of the inflammation mediator like prostaglandins and cytokinin. This had caused the elevation int eh temperature by circulating in the bloodstream [13] [14] [9]. Paracetamol lowered the temperature in a certain mechanism, and the same can be attributed to the polyherbal capsules too these might have also lowered the temperature rapidly due to the addition of piperine in the formulation. This has acted as a penetration enhancer that was responsible for the rapid action of the capsules.

CONCLUSION

Polyherbal capsules were prepared using the extracts of Leucas Clarki which was investigated for the antipyretic activity and powder of Piper longum fruits. Already the extract has a significant antipyretic activity which was further enhanced by the addition of piper into the capsules. Overall, the activity in terms of rectal temperature lowering was substantial and also the duration of action was increased. There was a quicker onset of action the extract due to the addition of the piper fruit powder, which was desirable.

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Conflict of Interest

Authors declared no conflict of interest.

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