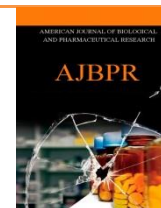




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PREPARATION AND EVALUATION OF SYRUP FORMULATION FOR PYRESIS

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ABSTRACT

Fever is also called as pyrexia or hyperthermia is the body temperature that is higher than normal and is the most common symptom. The higher temperature of body occurs due to infections or by allergy and swelling in the body. It shows greater heat formation in the body. Fever is controlled by using nonsteroidal anti-inflammatory drugs therapy which produces ulcer, gastric bleeding, perforation and obstructions reactions. The present study was conducted to prepare the syrup for fever (anti pyretic) from the plant extract of piper nigrum species and cymbopogon to show initial recovery of the fever. This was investigated on the yeast induced pyrexia, and it showed a better activity compared to the standard paracetamol drug and also a marketed formulation. This can be supported by the antioxidant and antibacterial properties of Cymbopogon and also supported by the *Piper nigrum* that contains piperine which as usually acts as a penetration enhancer in pharmaceutical applications.

INTRODUCTION

Fever is also called as pyrexia or hyperthermia is the body temperature that is higher than normal and is the most common symptom. The higher temperature of body occurs due to infections or by allergy and swelling in the body. It shows greater heat formation in the body. Fever is controlled by using nonsteroidal anti-inflammatory drugs therapy which produces ulcer, gastric bleeding, perforation and obstructions reactions. The cyclooxygenase inhibitor drugs reduce and controls the different types of heart burn. It shows cardiovascular problems. The fever is occurred due to common cold, meningitis, infections, urinary tract infection, appendicitis and malaria. The infections which causes fever are bacterial, viral and parasitic infections. Antibiotics are used to treat the infection that causes fever. The psychological conditions such as stress are involved

when the drug is more frequently used, then the addicted drug becomes resistant and do not show the action on the disease. The pyrosis are controlled by the drugs. Various diseases are treated by the source of the herbal plants. These plants are determined by proving the mechanism and molecular action of the medicine. There is proof for the traditional use of ayurveda and siddha to treat the diseases effectively and acts as potential. The cymbopogon plant reduces fever and is more potential to control wounds & inflammatory action. The herbal medicines are most commonly used when compared to synthetic compounds in the diseases such as CHF, stroke and cancer, etc. the present study was conducted to prepare the syrup for fever (anti-pyretic) from the plant extract of piper nigrum species and cymbopogon to show initial recovery of the fever.

EXPERIMENTAL SECTION

The plant of vitex was identified near a pond in the farm and was prepared into herbarium and was authenticated. The plant stems were collected and appropriately dried in an oven and powdered finely. This fine powder was

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extracted using ethanol using the maceration process. 10gm of the drug was taken in a beaker and macerated with 70%ethanol of 150ml and with occasional stirring for about 24 hrs, and then it is filtered off using filter paper. This filtrate was collected and evaporated in a water bath. The obtained extract was desiccated and stored. The same process was repeated with the piper longum too.

FORMULATION OF SYRUP

The dried plant parts were collected from the market and extracted using ethanol and water mixture of 45%v/v and the extract as collected. The syrup was prepared using specific quantities as per table 1. The extracts were mixed with the sugar syrup base as per specified quantities and are then appropriately dissolved with continuous stirring in a mechanical stirrer. The resultant solution is an antipyretic syrup and was tested directly on the rats for antipyretic activity.

EVALUATION

Animal segregation

Albino swiss rats were selected for the activity which weighed around 130-140gm. They were followed their regular protocol as per CPCSEA guidelines for animal acclimatization of animals. In the laboratory, they were allowed with free access for food and water in their cages. All the animals were induced with the pyrexia in the yeast method. 15% w/v solution of yeast was suspended in the methylcellulose solution, and it was injected into the skin of the rats and allowed to sit alone in their cages for 12 hrs [9]. The rats were selected on the basis that the rats that showed only a gain in temperature of at least 0.6°C were selected for the study [10].

METHODOLOGY

The animals which showed induction of pyrexia were then divided into four groups out of which one group served as a negative control group. Animals in these groups received the only saline at 0.9%w/v, and 1.6ml of this solution was administered to each rat. For the second group,

standard drug paracetamol was suspended and administered to the rats at a dose of 150mg/kg of rats [11]. To the third group, a marketed formulation with antipyretic property has been selected and administered via oral route at the dose specified in the label claim and instructions sheet. To the last group, the prepared poly herbal antipyretic syrup had been administered orally at a dose of 1ml/kg body weight of the rats [12]. The rectal temperature was recorded using a digital thermometer for every 1hr, 2hr and 4hr and 6hr

RESULTS

The prepared poly herbal syrup was thick, and the pH was about 5.5-5.9, which was slightly acidic and tasted sweet and citrusy. The viscosity of the syrup was also acceptable. The colour of the syrup was a thick brownish-yellow colour. Overall, it was acceptable and comparably similar to the marketed syrup formulation.

The prepared antipyretic formulation was tested against the pyrexia induced using the brewer's yeast. The induction of the yeast it, not the subcutaneous layer resulted in the rectal temperature of the rats. There was a significant rise in the rectal temperature. The prepared syrup significantly lowered the temperature to normal as compared to the average temperature of the rats. The marketed formulation also lowered the body temperature of the rats significantly but not less than the standard paracetamol drug. The experiment continued to note the rectal temperature for 4hrs, and all the drugs showed a normalization of the temperature to a normal body temperature of the rats. Yeast induced fever was a typical example of the infection-induced elevation of the temperature. It was suggested and evident that the paracetamol inhibits the elevation in the temperature by inhibiting the prostaglandins that are produced due to the infection in the body. This also releases cytokinins into the bloodstream that causes the rise in the rectal temperature. The herbal syrup also lowered the temperature compared to the syrup, so it is advocated that the syrup also acts in the same mechanism of action by inhibiting the prostaglandins and cytokinin [13].

Table 1: Composition of Poly Herbal syrup

S. No	Materials	Quantities
1	Cymbopogancitratus extract	100mg
2	Piper nigrum extract	100mg
3	Sugar	10g
4	Distilled water	qs
5	Citric acid and regulators	10mg

Table 2: Effect of Syrup formulation

Group	Temp ⁰ c	Temp after drug ⁰ c			
		1hrs	2hrs	4hrs	6hrs
Negative group	41.83±0.68	45.64±0.93	43.56±2.34	44.9±0.75	45.01±2.07
Standard drug	40.02±0.97	43.6±0.74	44.72±2.26	42.53±0.32	41.93±0.85



Marketed formulation	41.8±2.25	43.12±2.38	42.45±0.89	41.78±0.94	40.67±0.73*
Polyherbal antipyretic syrup	43.73±0.82	45.38±1.29	41.63±0.97	42.84±2.02	39.98±0.58*

CONCLUSION

The plant *Cymbopogon* was extracted using the ethanol-water mixture, and this extract was used to produce the polyherbal antipyretic syrup. This was investigated on the yeast induced pyrexia, and it showed a better activity compared to the standard paracetamol drug and also a marketed formulation. This can be supported by the antioxidant and antibacterial properties of *Cymbopogon* and also supported by the *Piper nigrum* that contains piperine which as usually acts as a penetration enhancer in pharmaceutical applications.

CONFLICT OF INTEREST

Authors declared no conflict of interest.

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