Anti-inflammatory activity of alpha amylase on rats using the Paw oedema method

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Abstract

Objective: -To investigate the effect of alpha amylase for anti-inflammatory activity in the albino rats. Material and methods: Alpha amylase, 200mg, 400mg/kg administered orally with a vehicle of grape seed oil, 0.1%of 1ml formalin by paw edema method by plethysmometer, Results: Acute toxicity studies are also performed on the mice for 7 days start from 100 mg/kg to 2000 mg/kg for 7 days. Phytochemical studies show the presence of alkaloids, glycosides, saponin, carbohydrates and proteins etc. For anti-inflammatory studies the paw measurement of rats paw between interval of 01 hour for total 3hr. After the studies the mean and Standard error of mean also calculated. Comparsion of the standard, test, control and their % of inflammation inhibition also performed in this study.

Key word: Alpha amylase, Anti-inflammatory activity, Grape seed oil,

Background: Inflammation is the safety response of the body which comes after any physical and chemical injury in the body. There are two types of inflammatory response to acute inflammation, which remain in our body duration of one week[1]. Chronic inflammation is the condition when inflammation remains in the body more than one week. Inflammation induced in the body when hormone prostaglandin produces their action on C0X-2 (Cycloxygenase) receptor. Most of the anti-inflammatory drug produces their action work on COX-2 receptor[2]. Alpha amylase is the drug which is obtained from the plants, animal and microbiological source[3].

In present scenario in allopathic practice use anti-inflammatory drugs for long period use of these type drugs can produce side effect like peptic ulcer, gastric ulcer, vomiting. Alpha amylase is a microbiological product[4]. Alpha amylase produces hepatoprotective activity the use of amylase as Antinflammatory drug can produce two advantage first advantage is providing help in the digestion of sucrose and there is no chance of gastric irritation by the use of alpha amylase[5].

Material and Method

The study was conducted on Wistar albino rats as per the method described by H.Vogel Wolfgang[6]. In present study alpha amylase powder laboratory grade Oxford laboratory Mumbai use as an anti-inflammatory agent as a test drug. Grape seed oil is used as a vehicle for alpha amylase[7]. Albino rats of both sexes weights approximate (150-200) grams are used for the activity. The animals can be divided into five group A.Neagative Control B. Control C. Standard D. Test group.

Firstly we measure the weight of all groups of animals after that we measure the paw size of all group animals. Inflammation induces in the bodies of all animals except negative control. Inducing inflammation in the bodies 1% of 1ml formaline injected into the bodies of each group animals after the rats subjected to light diethyl ether anesthesia. Rats in the healthy groups subject 0.1 ml of physiological saline and receive orally.

For detecting anti-inflammatory activity of drugs, for the group of standard animals treated with diclofinace 5mg/kg. The test group can be dived into two groups. First group of animal is treated with 200 mg/kg, other group of test animal is treated with 400 mg/ kg[8].

After administration of the drugs in the standard, test and control groups. Evaluation of paw size at time interval of 1hr, 2hr, 3hr. Plethysmometer was used for checking the inflammation activity[9]. Reading which obtained from the different groups animals upload in the statical formula and calculate the results.

Results

Acute toxicity test

The alpha amylase drug with vehicle grapes seed doses of 200,400,400,800,2000 mg/kg to groups of mice (n 5) and percentage mortality was noted for 24 h up to the period of 7 days[10].

Phytochemical screening of the Amylase

Phytochemical screening of alpha amylase different test performed on it. Phytochemical characterization studies are the qualitative chemical analysis used to detect the presence of various groups of phytoconstituents in the alpha amylase. The analysis was carrying out the following chemical analysis i.e. Alkaloids, Steroids, Flavonoids, Glycosides triterpenoids, quinine, Tannin, Saponin, Protein are identified using various reagents[11].

Anti-inflammatory Activity:-

The anti-inflammatory activity was studied using Carrageenan Induced Paw edema test. All the test compound, namely D1, D2 administered orally 200 ,400 mg per kg body weight according based upon the acute toxicity studies and 5 mg per kg body weight Diclofenac sodium was used as a standard. The control animal not administered any drug. 01 ml of 01% formalin solution in normal saline solution was injected into the sub planter region of the hind paw. The paw edema was recorded using a plethysmometer at different time interval.

Fig. 1 Image of normal and inflamed paw of albino rat.

Statically Analysis:-

Compound Code	Dose (mg/kg)	Mean Paw volume at different time interval				Percentage inhibition of edema value		
		Before the drug	1st h	2nd h	3rd h	1st h	2ndh	3rd h
Negative Control		1.8+ 00	4.1±0.76	4.1±0.76	4.1±0.76	100	100	100
Control	0.5% CMC	1.8+00	1.8+ 00	1.8+ 00	4.0±0.75	0%	0%	15%
Standard	Diclofenac Sodium 5 mg/kg	1.8+00	4.0±0.75	3,9±0.79	3.9±0.76	15	30	50
Amylase	200 mg/kg	1.8+00	4.1±0.76	3,9±0.79	3,9±0.79	0	30	25
Amylase	400 mg/kg	2.0+0.21	4.0±0.75	4.0 ±0.74	3.9±0.78	15	24	40

Table 1.1

N= 6 Value of mean±± SEM** P 0.01% is significant; values are compared with the control group.

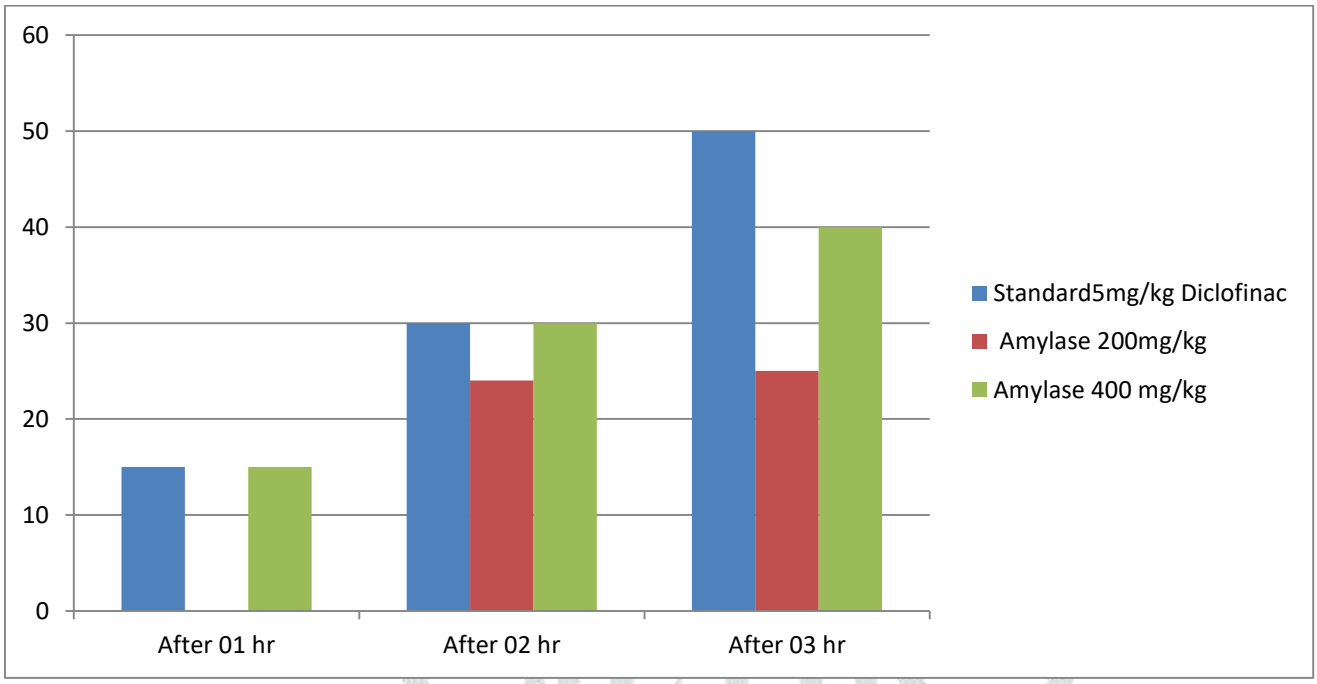

Figure 1.2 Show representation of test drug and standard drug comparative study.

Results:- All the four compound produced significant inhibition of edema in Carrageenan induced paw oedema model at a dose of 5 mg/kg (orally). These compound had an increased significant ($P<0.01$) at various time interval and showed maximum activity (39%, 34%, 40%, 40%) showed maximum inhibition as compared to standard.

Discussion

In present study data show the comparative study with alpha amylase drug and standard drug diclofinace drugs.

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