ANTI HISTAMINIC ACTIVITY OF CISSUS QUADRAGULARIS

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ABSTRACT: Anti histaminic activity of cissus quadrangularis stem powder was carried out determining histamine activity and histamine content in carrageenin induced rat paw swelling model and formalin induced peritonitis respectively. The crude powder at the dose of 100mg/1000 gm exerted reduction to the maximum of 44% in the early histamine phase swelling. Further it significantly reduced the histamine content in the peritoneal fluid. For comparison standard steroidal drug hydrocortisone and avil were used.

INTRODUCTION:

Histamine plays an important role in the symptomatology of allergic reactions. The drug which has the capacity to control the histamine release and its further effects can be called as anti histaminic or anti allergic drugs (1). Though number of anti histaminic drugs are available study on natural drug will be promising.

Cissus quadrangularis belongs to the family vitaceae and the stem paste has been reported to be used in the treatment of asthma (2). Since asthma is caused by anaphylactic reactions of histamine, the anti histaminic activity of cissus quadrangularis.

MATERIALS AND METHODS:

Cissus quadrangularis as collected from herbal garden, Tamil University. It was shade dried and powdered.

Experimentation
Carrageenin Induced Rat Paw Edema (3)

Male albino rats (purchased from Bangalore) weighing about 150gm to 200gm b.wt were selected and grouped and each group had 5 animals. One group is treated as control without drug treatment. The other groups were treated with crude powder of C.quadrangularis at various doses likely 50 mg, 100mg, 150 mg and 200 mg/100 gm b.wt respectively. The drugs were administered orally in saline suspension 1 hr and 24hr prior to experimentation standard drugs avil 1mg, hydrocortisone 1.5 mg/100g. b.wt were also given to another groups of animals.

All the animals were injected with 0.1ml of 1% (w/v) carrageenin in the subcutaneous region of the hind paw during the early first our histamine is released and induced swelling in the rat paw. The swelling was measured by the mercury displacement method at the end of the first hour. The reduction in the paw swelling volume compared with control was taken as the determination of histamine activity.

Formalin induced peritonitis (4)

Since histamine plays prominent role in the vascular exudation, the peritonitis model was selected, the animal was grouped into various groups consisting of 5 animals in each. One group was treated as control
without drug treatment all other groups were treated with various doses of C. quadrangularis powder 50 mg, 100 mg, 200 mg and also standard drugs avil (1mg) hydrocortisone 1.5 mg/100 gm b.wt. the drugs were administered orally in saline suspension 1 hr and 24 hr prior to the experimentation.

All the rats were injected with 1.0ml of 1.5 ml of formalin (v/vaseline) intraperitoneally and the accumulated fluid was collected from the peritoneum after 5th hour of the experiment by scarifying the animals. The volume of the fluid and histamine content in the fluid were determined and compared with control groups. The histamine content in the fluid was measured spectrofluorimetrically following the method of sore et al (5)

**RESULTS AND DISCUSSION**

Cissus quadrangularis crude powder reduced the rat paw swelling to the maximum of 44% during the early first histamine phase at the dose of 100mg/100 gm b.wt.

In the carageenin edema process, mediators are released in an ordinate sequence and the first phase is considered as the (6) histamine phase in which there is an explosive output of histamines released from mast cells (7). The drug at the dose of 50mg/100 gm and 150 mg b.wt observed as the effective therapeutic dose.

Table 2 shows significant reduction in the peritoneal fluid accumulation during peritonitis. Further also significantly reduced the histamine content in the fluid. Hydrocortisone exerted 30% reduction in the fluid accumulation and also in the histamine content.

It is known earlier that vascular exudation/permeability in the peritoneum is caused mainly by the release of histamine from mast cells (5). This process of histamine secretion is triggered by the influx of calcium ions into the mast cells (8).

In the present observation the C. quadrangularis powder was able to reduce the histamine content. It may be due to the inhibitory effect on calcium influx into cells as it was evidenced earlier (9) and thus the drug powder would have controlled the release of histamine content.

Further reports are available that triterpenoids are involved in the anti-exudative activity (10). Phytochemical analysis revealed that C. quadrangularis contained triterpenoids, amylole and amyrin and sitosterol (11).

It is reported earlier that the steroidal drug hydrocortisone has the capacity to reduce histamine concentration by decreasing the deregulation of mast cells (12) the presence of sitosterol in guadrandularis could also potentiated the anti histaminic activity by controlling the release of histamine and thereby restoring vascular wall integrity and thus prevented the exudation.

The present observation might suggest the anti histamine activity of cissus quadrangularis.

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Table 1
Effect of cissus quadrangularis in carageenin induced paw swelling in rats (histamine phase 1st hour)

| Subject        | Drug dose Mg/100g. bwt | % of swelling | % of inhibition |
|----------------|------------------------|---------------|----------------|
| Control        | -                      | 6.94+1.153    | -              |
| c.quadrangularis | 50                     | 10.38+1.4b    | -              |
|                | 100                    | 3.68+0.67a    | 44.4%          |
|                | 150                    | 8.51+1.5*     | -              |
|                | 200                    | 5.0+1.0c      | 27%            |

Each group consisted of 5 rats. Results are compared with control.
A=b<0.001b=p<0.005 c=p<0.025 * insignificant
Table -2
Effect of cissus quadrangularis in fluid accumulation and histamine content in formalin induced peritonitis

| Subject          | Drug dose Mg/100g. bwt | Fluid Vol (ml) | Histamine content (ng) | % of inhibition |
|------------------|------------------------|----------------|------------------------|-----------------|
| Control          | -                      | 6.4            | 60.38+5.2              | -               |
| C. Quadrangularis| 50                     | 5.8            | 54.71+4.0*             |                 |
|                  | 100                    | 3.7            | 34.9+4.5 a             | 42.2            |
| Avil             | 1                      | 4.7            | 44.34+3.5 a            | 26.57           |
| Hydrocortisone   | 1.5                    | 5.5            | 51.89+9*               | 14.06           |
| Phenylbutazone   | 10                     | 4.5            | 42.45+5.2a             | 29.70           |
|                  |                        | 5.7            | 59.43+7*               | 1.57            |

Each group consisted of rats. Results are compared with control AP<0.001 * insignificant