ABSTRACT

INTRODUCTION
The drug under the study “Cakramarda (Cassia tora, Linn.)” which is abundantly available in our country has never been put to judicious use despite of its having diverse properties. Its seeds are taken orally as folk-remedy for the cure of rheumatism in some of the rural areas of Jammu (J&K) region. Different scientific studies have demonstrated the diversified medicinal uses of this drug Cassia tora but till date no work has been done for its establishment as an anti-arthritic drug.

The seed powder of the drug was combined with a well known Ayurvedic drug Guggulu (Commiphora mukul, Hook. Ex. Stocks) which is an excellent Yogavah (a compound that carries the other substances mixed with it, to deep in to the tissues) and itself is having an anti-inflammatory action. In the present study this combination of Cakramarda and Guggulu (C.G. Compound) was taken in comparison with Cakramarda seed powder to study its effects in the management of “Amavata”, clinical manifestations of which are very much similar to that of Rheumatoid Arthritis and management of which still remains a problem to the medical science.

SELECTION OF TOPIC
- Cakramarda (Cassia tora) – A Folk remedy for different arthralgias
- No classical reference of its use as such in Amavata (R.A.).
- Cakramarda seed are mentioned as Tiksna (piercing) and Katu (pungent) and subduer of Kapha and Vata.
- A preliminary study of Cakramarda seed powder on Amavata showed encouraging results.
- The seed powder of the drug was combined with Guggulu (Commiphora mukul) which is an excellent Yogavah (which carries other substances deep into the tissues of the body) and Sothahara (anti-inflammatory) showed better and quick results.
- Rheumatoid arthritis (Amavata), the management of which still poses a challenge to the medical science.

AIMS AND OBJECTIVES
1. To clinically evaluate the effect of Cakramarda Guggulu compound in comparison with Cakramarda seed powder in Amavata (Rheumatoid Arthritis).
2. To investigate the anti-inflammatory activity of the drugs in albino rats.
3. To study the acute toxicity of the drugs in albino rats.
4. To find out the toleration of the drugs to the patients and adverse effects, if any.
5. To Standardize Cakramarda Guggulu Compound and Cakramarda seed powder before their administration.

PLAN OF WORK
The work was planned and carried out in following stages:
1. Review of literature
2. Standardization of trial drugs
   a) Preparation of drugs
   b) Microscopic analysis
   c) Quantitative analysis
   d) Thin Layer Chromatography
   e) X-ray analysis
   f) Determination of Rasa and its taste threshold

4. Pharmacological study
   a) Toxicity study
   b) Anti-inflammatory activity study

5. Clinical study

REVIEW OF LITERATURE

Cakramarda (Cassia tora, linn.)

However, no reference of Cakramarda or its synonyms was found in vedic literature but it finds a place in Ayurvedic literature right from the time of Samhitā period. All the Samhitās, Nighantus, Rasaśāstra texts and later Āyurvedic works were reviewed for its every aspect and inferred accordingly. The other up to date description of the drug Cakramarda (Cassia tora) like that of its Botany, Chemistry, pharmacognostical, pharmacological studies and its description in other literature were reviewed thoroughly.

Guggulu (Commiphora mukul)

Detailed description of Guggulu is available in different Ayurvedic and other literature along with extensive work has been carried out on this drug. As in this study it is taken up as a component of Cakramarda, a short review of its details in literature was taken including that of its pharmacological studies.

Review of literature (disease)

There is a description of a disease entity “Āmavāṭa” in Āyurveda, highly resembling with Rheumatoid Arthritis. The details of Āmavāṭa in Āyurveda and Rheumatoid Arthritis in modern system of medicines were also reviewed thoroughly.

STANDARDIZATION OF TRIAL DRUGS

Cakramarda (Cassia tora) seeds were collected and Guggulu (Commiphora mukul) was procured from the market after proper authentication and were processed into drugs Cakramarda Guggulu Compound and Čakramarda seed powder. The processed drugs were standardized by Microscopic analysis, Quantitative analysis, Thin layer chromatography (TLC), X-ray analysis and their tastes (rasa) and taste thresholds were also analyzed.

PHARMACOLOGICAL STUDY

Toxicity studies of the drugs were carried out on Swiss albino mice (HA strain), which revealed their LD$_{50}$ as very high.

Animal experiments on carrageenan induced rat paw edema were conducted to evaluate and confirm anti-inflammatory activity of Cassia tora (extract A) and Cassia
tora plus Commiphura mukul extract (extract B). Piroxicam (a known anti-inflammatory drug) was used for comparison.

In the present investigation weighed amount of extract was triturated with 3% tween 80 solution and different doses such as 200, 400, 800 mg/kg in both the extracts were used to evaluate the anti-inflammatory activity.

In carrageenan induced rat paw edema (acute model of inflammation), both the extracts showed dose dependant activity. The inhibition of 45.23% after three hrs and 23.26% after 24 hrs (extract A) was comparable with Piroxicam 3 mg/kg, which showed inhibition of 42.68% after 3 hrs and 66.38% after 24 hrs. The inhibition of 47.47% after three hrs and 153.07 after 24 hrs (extract A) was comparable with Piroxicam 3 mg/kg which showed inhibition of 42.68% after 3 hrs and 66.38% after 24 hrs. The results are statistically significant showing more than 95% confidence level.

The animals were observed throughout the work and no toxicity or death of animals was observed.

CLINICAL STUDY

Clinical study was conducted on total 114 patients of which 58 patients were studied under group-I (Cakramarda Guggulu Compound) and 56 patients were studied under group-II (Cassia tora seed powder).

Material and method

Criteria for selection

i. Age - Between 12-60 years
ii. Sex – Either
iii. Chronicity between 6 weeks to 5 years
iv. Clinical criteria* (American College of Rheumatology, 1987)
   a) Morning stiffness
   b) Arthritis of three or more joints
   c) Arthritis of hands
   d) Symmetric arthritis
   e) Rheumatoid nodules
   f) Positive serum rheumatoid factor
   g) Radiographic changes
* Criteria a – d must be present for at least 6 weeks.
* Criteria b – c must be observed by the physician.

Criteria for exclusion

i. Age – Below 12 years and above 60 years
ii. Chronicity below 6 weeks or more than 5 years
iii. Gout
iv. Osteoarthritis
v. Arthritis with malignancy
vi. Osteomyelitis
vii. Rheumatic fever
viii. Ankylosing spondylitis
ix. Serious complications associated with any other systemic diseases
Criteria for routine examination and assessment

Full details of history, physical examination and the data of lab. investigations of the patients were recorded in a specially prepared proforma for the trial. The Ayurvedic methodology for the examination as of Sarira Prakrti, Manasa Prakrti, Sāra and Srotasa Parikṣana was also adopted. After the start of treatment, patients were advised to visit after every two weeks interval. During every visit their complete physical examination was done. Lab. investigations were done before and after the course of treatment. The effects of drug on various presenting symptoms and lab. investigations were evaluated on the basis of the observations made before and after the course of therapy. A score system was observed for the gradation of severity of the symptoms at various stages of treatment. The scores of observations of symptoms were multiplied according to number of involvement of joints. The percentage of relief was calculated accordingly by the equation:

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\frac{\text{Scores before treatment} - \text{Scores after treatment}}{\text{Scores before treatment}} \times 100
\]

The patients who left against medical advice during the treatment were not taken into account for the assessment of results of the study.

No. of groups: Clinical trial comprised of two groups:
   i) Group - I
   ii) Group - II

No. of patients:
   i) 58 patients were studied under group - I
   ii) 56 patients were studied under group - II

Principal drugs and diet
a) Principal drugs: Cakramarda Guggulu, a compound of cakramarda seed powder and Guggulu (purified in Triphala) in 1:1 ratio for the 1st group and Cakramarda seed powder for 2nd group. A good quality of drugs were procured after proper identification and processed in the form of identical capsules.
b) Diet: Easily digestible food articles (Laghu āhāra).

Dose schedule and vehicle
a) Dose schedule:
   - Group - I: Cakramarda guggulu compound capsules (500 mg each) in the dose of 2 capsules thrice daily after meals.
   - Group - II: Cakramarda seed powder capsules (500 mg each) in the dose of 2 capsules thrice daily after meals.

   b) Vehicle: Luke warm water

Laboratory Investigations
a) Routine investigations of stool, urine and blood
b) Blood Glucose - Fasting and P.P.
c) Blood Urea
d) Serum Uric acid
e) Serum Cholesterol
f) Rheumatoid factor (Latex fixation test) with titer
g) X-rays of the affected joints

**Observations and Results**

Total 114 patients of which 58 patients were in the group-I and 56 patients were in the group-II were studied under the trial. Their characteristics, symptoms of disease and lab. investigations and other observations were recorded in the proforma specially prepared for the study and the results were drawn and evaluated statistically.

**CONCLUSION**

On the basis of the data of present clinical study, animal experiments and the inference drawn about the action of the drugs as discussed, the following conclusions are drawn:

- The Combination of Cakramarda (Cassia tora) and Guggulu (Commiphora mukul) i.e. Cakramarda Guggulu compound is a well tolerated drug and along with the anti-inflammatory activity, it has more significant anti-rhumatoid arthritis activity in Ámavāta (Rheumatoid Arthritis) in comparison with Cakramarda seed powder.

- Cakramarda seed powder is also a safe drug devoid of any toxic effects and having significant anti-inflammatory and anti-rhumatoid arthritis activities and can be utilized successfully in Ámavāta (Rheumatoid Arthritis).

Hence, the present study testifies the folk-lore claim of the use of Cakramarda in Ámavāta (Rheumatoid Arthritis) and this abundantly available drug which is like an unsung song of the nature can be put to judicious use in Ámavāta (Rheumatoid Arthritis) in combination with Guggulu for additive effects.