Clinical Research

Clinical efficacy of *Rasona Pinda* in the management of *Amavata* (rheumatoid arthritis)

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**Abstract**

In the present clinical study, 63 patients of *Amavata* were registered from the Kayachikitsa out patient department/indoor patient department (OPD/IPD) of Sir Sunder Lal Hospital (Indian Medicine Wing), IMS, BHU, Varanasi-5. In group I (*Rasona Pinda*), 27 patients completed the study of a total of 33 patients registered in the group (six patients dropped out mid-therapy). In group II (control group), 23 patients completed all three follow-ups out of 30 patients (there were seven dropouts in mid-therapy). In group I, complete remission in 29.6%, major improvement in 59.3% and minor improvement in change in font so as to appear 11.1% were observed. In group II, complete remission in 13%, major improvement in 21.7%, minor improvement in 39.1% and unchanged in 26.9% of the patients were observed.

**Key words:** *Amavata*, Rheumatoid Arthritis, Agni, Ama, *Rasona Pinda*, Visual Analog Scale

**Introduction**

*Amavata* (rheumatoid arthritis) is a common disorder, with varied clinical signs and symptoms related to multiple anatomical sites, both articular and extra-articular.[1] Presently, the non-steroidal anti-inflammatory drugs (NSAIDs) are the mainstay in this condition; however, they have serious adverse effects and have limitations for long-term therapy.[2,3] The immunosuppressive drugs are reserved for selected cases, while the disease-modifying drugs like gold salts are costly and have a low benefit-risk ratio.[4] Hence, there is a need for drugs having good efficacy with low toxic profile in this debilitating disorder. A number of indigenous drugs have been claimed to be effective in the treatment of rheumatoid arthritis, but their claims have not been largely substantiated in well-controlled clinical trials. The formulation under investigation, *Rasona Pinda*,[5] is one such preparation that has been described in the ayurvedic text, Bhav Prakash, in *Amavataadhikar*.

*Amavata* (rheumatoid arthritis) is the prime disease that cripples a person and makes one unfit for an independent life, and about 60% of the patients become unfit to work 10 years after the onset of this disease. This disease is still a challenge to medical science. *Amavata*, as a disease, was first described in detail by Madhavakara in Madava Nidana.[5] The word *Amavata* is made up of a combination of two words, Ama and Vata.[6] The disease is mainly due to derangement of Agni, like Jatharagni, Dhatvagni and Bhutagni, etc., resulting in the production of Ama, and this Ama circulates in the whole body by the vitiated Vata and gets located in the Sandhis (joints), causing pain, stiffness and swelling over the joints.[7] According to modern medicine, it is strikingly similar to rheumatoid arthritis, which is a chronic autoimmune disease that causes inflammation and deformity of the joints. Rheumatoid arthritis can also cause inflammation of the tissues around the joints as well as other organs in the body. Autoimmune diseases are illnesses that occur when the body tissues are mistakenly attacked by one’s own immune system. Other problems throughout the body (systemic problems) may also develop, including inflammation of blood vessels (vasculitis), development of bumps (called rheumatoid nodules) in various parts of the body, lung disease, blood disorders and weakening of the bones (osteoporosis).[8,17]

**Materials and Methods**

The study was carried out at the Kayachikitsa OPD and IPD of Sir Sunder Lal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi. A total of 63 patients of *Amavata* were selected for the present study. Of the 63 patients, 13 patients were dropped out during the mid-trial period. The cases were randomly selected irrespective of their age, sex, occupation, socioeconomic status, *Prakriti* and Agni. Both acute and chronic phases of *Amavata* patients were taken for the study following the criteria of the diagnosis of rheumatoid arthritis according to the modern medical parameter and the clinical features of *Amavata* described in Madhava Nidana. These patients were randomly divided into two groups. Group
I was treated with Rasona Pinda and group II received Cox-2 inhibitor Etoricoxib (Nucoxia). The study protocol was approved by the ethical committee of the university.

**Inclusion criteria**
1. Clinical feature of the disease according to modern practices and Ayurveda.
2. ATA filling the criteria for diagnosis of rheumatoid arthritis approved by the ARA 2000 revision.
3. Patient between the ages of 16 and 65 years.

**Exclusion criteria**
1. Severe deformities.
2. Severe ankylosed joints.
3. Major complications.
4. Ankylosing spondylitis.
5. Rheumatic arthritis, septic arthritis, osteoarthritis and gouty arthritis.
6. Rheumatoid arthritis associated with other systemic disorders.

**Follow-up Studies**

Every patient registered after fulfilling the inclusion criteria underwent assessment of symptoms and also assessment of the different components of the inflammatory index, walking time, grip power and pressing power. Twenty-seven patients of rheumatoid arthritis who also completed the three follow-ups in group I had received Samshaman (Rasona Pinda) therapy. Forty patients were selected based on the above clinical criteria and subjected to comprehensive, therapeutic regimens as per the classical description.

**Study groups**

*Treatment schedule for Group I*
Rasona Pinda
50–60 mg/kg/bodyweight, three divided doses for 3 months and 1 month of follow-up

*Treatment schedule for Group II*
Tab. Etoricoxib-90 (Nucoxia 90) one tab. OD.

**Contents of drug and preparation**
Rasona (Allium sativum, 400 g), Tila (Sesamum indicum, one Kudava [160 g]), Hingu (Ferula asafoetida), Trikatu (Zingiber officinale, Piper nigrum, Piper longum), the two kshars, Pancha Lavanas (five salts), Satapushpa (Anthemis sauvage), Nisha (Curcuma longa), Kustha (Saussurea lappa), Pippalimula (Piper longum), Chitraka (Plumbago zeylanica), Ajamoda (Trachyspermum roxburghianum) and Dhanyaka (Coriandrum sativum) – each one pala (40 g) are all made into a fine powder, filled into a pot smeared inside with ghee adding Taila (oil) and Kanjika (rice gruel) half Prasrtha (320 g) each to this powder and the pot is kept undisturbed for 16 days.

**Statistical Analysis**

The data obtained were processed on a computer with the help of “SPSS” software package for the statistical analysis.

**Clinical Assessment of the Disease**

**Subjective criteria**

1) Pain: Visual Analog Scale [Figure 1]

| Symptom            | Grading |
|--------------------|---------|
| No Tenderness      | 0       |
| Says tender         | 1       |
| Patient winces     | 2       |
| Winces and withdraws| 3       |
| Not allowed to be touched | 4       |

3) Stiffness

| Time               | Grading |
|--------------------|---------|
| 0–5 min            | 0       |
| 5 min–2 h          | 1       |
| 2–8 h              | 2       |
| 8 h or more        | 3       |

4) Redness

| Severity           | Grading |
|--------------------|---------|
| Absent             | 0       |
| Mild               | 1       |
| Moderate           | 2       |
| Severe             | 3       |

5) Swelling

| Severity             | Grading |
|----------------------|---------|
| No swelling          | 0       |
| Felling of swelling + heaviness | 1       |
| Apparent swelling    | 2       |
| Huge (synovial effusion) swelling | 3       |

**Criteria for assessment of overall effects**

For the gross assessment of the result obtained with the clinical trial, the response of the treatment was determined in terms of:

**Subjective improvement**

Patients were specifically asked about their increased felling of well being and improvement of general function capacity after the treatment.
Clinical improvement
Reduction in pain, swelling, stiffness, tenderness, deformity and general function capacity.

Functional assessment
Decrease of walking time and increase of pressing power and grip power.

Hematological and biochemical assessment
Hemoglobin %, Total leucocyte count, Differential leucocyte count and Erythrocyte sedimentation rate and certain immunological examinations like serum rheumatoid factor and C-reactive protein value were recorded before and after the treatment in registered cases to evaluate the nature and extent of change in relation to course of disease Amavata (RA). Liver function test, serum creatinine and blood urea value were recorded before and after the treatment in registered cases to evaluate the safety profile of the drug.

Observation and Results
The maximum number of patients, i.e. 38.4%, belong to the age group of 41-50 years. The majority of the patients were female (80%), 72% of the patients were Hindu, 52% were housewives and 40% belonged to the poor class. The maximum number of patients were of Vata-Kapha prakriti 40%, and 76% of the patients had a negative family history. The results on symptoms of Amavata are shown in Tables 1-11.

Discussion
A significant reduction in the time duration of morning stiffness, joint pain score, swelling, tenderness, rheumatoid arthritis titer, CRP and the erythrocyte sedimentation rate was observed; however, the grip strength and foot pressure were significantly increased. A significant reduction status of Ama in

| Groups | Grade | Number of patients in each follow-up | Within-group comparison |
|--------|-------|-----------------------------------|------------------------|
|        |       | BT | AT1 | AT2 | AT3 | Friedman $\chi^2$ test |
| I (n = 27) | 0 | 0 | 0 | 1 (3.7) | 10 (37) | $\chi^2 = 70$ |
|          | 1 | 5 (18.5) | 3 (11.1) | 13 (48.1) | 15 (55.6) | $P < 0.0001$ |
|          | 2 | 6 (22.2) | 7 (25.9) | 4 (14.8) | 0 | $\chi^2 = 70$ |
|          | 3 | 3 (11.1) | 5 (18.5) | 0 | 0 | $P < 0.0001$ |
|          | 4 | 6 (22.2) | 0 | 0 | 0 | $P < 0.0001$ |
|          | 5 | 4 (14.8) | 0 | 0 | 0 | $P < 0.0001$ |
|          | 6 | 3 (11.1) | 0 | 0 | 0 | $P < 0.0001$ |
|          | 7 | 0 | 0 | 0 | 0 | $P < 0.0001$ |
| II (n = 23) | 0 | 0 | 0 | 0 | 2 (8.7) | $\chi^2 = 70$ |
|          | 1 | 4 (17.4) | 5 (30.4) | 8 | 8 (34.8) | $P < 0.0001$ |
|          | 2 | 4 (17.4) | 9 (39.1) | 9 | 5 (21.7) | $P < 0.0001$ |
|          | 3 | 6 (26.1) | 6 (26.0) | 4 | 0 | $P < 0.0001$ |
|          | 4 | 5 (21.7) | 1 (4.30) | 0 | 0 | $P < 0.0001$ |
|          | 5 | 3 (13.0) | 0 | 0 | 0 | $P < 0.0001$ |
|          | 6 | 1 (4.3) | 0 | 0 | 0 | $P < 0.0001$ |
| Between-group comparison | $\chi^2 = 5$ | $\chi^2 = 22.7$ | $\chi^2, P < 0.0001$ | $\chi^2, P < 0.0001$ |
| Pearson $\chi^2$ test | $P > 0.05$ | $P < 0.0001$ | $P < 0.0001$ | $P < 0.0001$ |

Table 1: Statistical change in pain score in 50 patients of Amavata (rheumatoid arthritis)

| Groups | Grade | Number of patients in each follow-up | Within-group comparison |
|--------|-------|-----------------------------------|------------------------|
|        |       | BT | AT1 | AT2 | AT3 | Friedman $\chi^2$ test |
| I (n = 27) | 0 | 0 | 0 | 1 (3.7) | 9 (33.3) | $\chi^2 = 45.6$ |
|          | 1 | 11 (40.7) | 8 (29.6) | 1 (3.7) | 0 (0) | $P < 0.0001$ |
|          | 2 | 6 (26.1) | 13 (48.1) | 7 (25.9) | 3 (11.1) | $P < 0.0001$ |
|          | 3 | 8 (29.6) | 0 (0.0) | 0 (0.0) | 0 (0.0) | $P < 0.0001$ |
| II (n = 23) | 0 | 0 | 0 | 0 | 2 (8.7) | $\chi^2 = 15.6$ |
|          | 1 | 6 (26.1) | 7 (30.4) | 6 (26.1) | 13 (56.5) | $P < 0.0005$ |
|          | 2 | 9 (39.1) | 7 (30.4) | 12 (52.2) | 8 (34.8) | $P < 0.0005$ |
|          | 3 | 6 (26.1) | 8 (34.8) | 5 (21.7) | 0 | $P < 0.0005$ |
|          | 4 | 2 (8.7) | 1 (4.3) | 0 | 0 | $P < 0.0005$ |
| Between-group comparison | $\chi^2 = 13$ | $\chi^2 = 36$ | $\chi^2 = 35$ | $\chi^2 = 20.06$ | $\chi^2 = 20.06$ |
| Pearson $\chi^2$ test | $P > 0.005$ | $P < 0.005$ | $P < 0.0001$ | $P < 0.0001$ | $P < 0.0001$ |

Figures in parenthesis are in percentage
### Table 3: Statistical change in stiffness in 50 patients of *Amavata* (rheumatoid arthritis)

| Group  | Grade | Number of patients in each follow-up | Within-group comparison |
|--------|-------|--------------------------------------|-------------------------|
|        | BT    | AT1                                  | AT2 | AT3          |
| I (n = 27) | 0 | 1 (3.7) | 4 (14.8) | 16 (59.3) | 18 (66.7) | $\chi^2 = 34.8$ | $P < 0.001$ |
|       | 1 | 12 (44.4) | 18 (66.7) | 11 (40.7) | 9 (33.3) |                  |             |
|       | 2 | 10 (37.0) | 5 (18.5) | 0 (0.0) | 0 (0.0) |                  |             |
|       | 3 | 4 (14.8) | 0 (0.0) | 0 (0.0) | 0 (0.0) |                  |             |
| II (n = 23) | 0 | 0 (0.0) | 0 (0.0) | 1 (4.3) | 5 (21.7) | $\chi^2 = 19.8$ | $P < 0.005$ |
|        | 1 | 9 (39.1) | 9 (39.1) | 8 (34.8) | 16 (69.6) |                  |             |
|        | 2 | 9 (39.1) | 12 (52.2) | 12 (52.2) | 2 (8.7) |                  |             |
|        | 3 | 5 (21.7) | 2 (8.7) | 2 (8.7) | 0 (0.0) |                  |             |
| Between-group comparison | | $\chi^2 = 3.7$ | $\chi^2 = 17.7$ | $\chi^2 = 44.2$ | $\chi^2 = 18.4$ |             |             |
| Pearson $\chi^2$ test | $P > 0.05$ | $P < 0.05$ | $P < 0.001$ | $P < 0.005$ |             |             |

Figures in parenthesis are in percentage.

### Table 4: Statistical change in redness in 50 patients of *Amavata* (rheumatoid arthritis)

| Group  | Grade | Number of patients in each follow-up | Within-group comparison |
|--------|-------|--------------------------------------|-------------------------|
|        | BT    | AT1                                  | AT2 | AT3          |
| I (n = 27) | 0 | 5 (18.5) | 16 (59.3) | 18 (66.7) | 24 (88.9) | $\chi^2 = 20.8$ | $P < 0.001$ |
|       | 1 | 16 (59.3) | 11 (40.7) | 9 (33.3) | 3 (11.1) |                  |             |
|       | 2 | 6 (22.2) | 0 (0.0) | 0 (0.0) | 0 (0.0) |                  |             |
|       | 3 | 0 (0.0) | 0 (0.0) | 0 (0.0) | 0 (0.0) |                  |             |
| II (n = 23) | 0 | 5 (21.7) | 2 (8.7) | 6 (26.1) | 10 (41.7) | $\chi^2 = 10.8$ | $P < 0.05$ |
|        | 1 | 11 (47.8) | 8 (34.8) | 15 (65.2) | 12 (50) |                  |             |
|        | 2 | 7 (30.4) | 13 (54.2) | 2 (8.7) | 1 (4.2) |                  |             |
|        | 3 | 0 (0.0) | 0 (0.0) | 0 (0.0) | 0 (0.0) |                  |             |
| Between-group comparison | | $\chi^2 = 15.9$ | $\chi^2 = 34$ | $\chi^2 = 41$ | $\chi^2 = 22$ |             |             |
| Pearson $\chi^2$ test | $P > 0.05$ | $P < 0.05$ | $P < 0.001$ | $P < 0.001$ |             |             |

Figures in parenthesis are in percentage.

### Table 5: Statistical change in swelling in 50 patients of *Amavata* (rheumatoid arthritis)

| Group  | Grade | Number of patients in each follow-up | Within-group comparison |
|--------|-------|--------------------------------------|-------------------------|
|        | BT    | AT1                                  | AT2 | AT3          |
| I (n = 27) | 0 | 0 (0.0) | 1 (3.7) | 1 (3.7) | 11 (40.7) | $\chi^2 = 43.9$ | $P < 0.001$ |
|       | 1 | 4 (14.8) | 5 (18.5) | 18 (66.7) | 14 (51.9) |                  |             |
|       | 2 | 5 (15.5) | 13 (48.1) | 8 (29.6) | 2 (7.4) |                  |             |
|       | 3 | 18 (66.7) | 8 (29.6) | 0 (0.0) |                  |             |
| II (n = 23) | 0 | 0 (0.0) | 7 (30.4) | 0 (0.0) | 2 (8.7) | $\chi^2 = 11.2$ | $P < 0.05$ |
|        | 1 | 6 (26.1) | 7 (30.4) | 5 (21.7) | 13 (56.5) |                  |             |
|        | 2 | 9 (39.1) | 9 (39.1) | 13 (56.5) | 8 (34.8) |                  |             |
|        | 3 | 8 (34.8) | 0 (0.0) | 5 (21.7) | 0 (0.0) |                  |             |
| Between-group comparison | | $\chi^2 = 15.9$ | $\chi^2 = 34$ | $\chi^2 = 41$ | $\chi^2 = 22$ |             |             |
| Pearson $\chi^2$ test | $P > 0.05$ | $P < 0.05$ | $P < 0.001$ | $P < 0.001$ |             |             |

Figures in parenthesis are in percentage.

### Table 6: Statistical change in status of Ama in 50 patients of *Amavata* (rheumatoid arthritis)

| Group  | Grade | Number of Patients in each follow-up | Within-group comparison |
|--------|-------|--------------------------------------|-------------------------|
|        | BT    | AT1                                  | AT2 | AT3          |
| I (n = 27) | 0 | 0 (0.0) | 7 (25.9) | 13 (48.1) | 17 (63) | $\chi^2 = 45$ | $P < 0.001$ |
|       | 1 | 7 (25.9) | 13 (48.1) | 11 (11.0) | 10 (37) |                  |             |
|       | 2 | 10 (37) | 6 (22.2) | 3 (11.1) | 0 (0.0) |                  |             |
|       | 3 | 7 (25.9) | 1 (3.7) | 0 (0.0) | 0 (0.0) |                  |             |
|       | 4 | 3 (11.1) | 0 (0.0) | 0 (0.0) | 0 (0.0) |                  |             |
| II (n = 23) | 0 | 0 (0.0) | 0 (0.0) | 0 (0.0) | 1 (4.3) | $\chi^2 = 7.2$ | $P > 0.05$ |
|        | 1 | 0 (0.0) | 1 (4.3) | 2 (8.7) | 1 (4.3) |                  |             |
|        | 2 | 8 (34.8) | 8 (34.8) | 8 (34.8) | 13 (54.2) |                  |             |
|        | 3 | 9 (39.1) | 12 (52.2) | 13 (56.5) | 8 (33.3) |                  |             |
|        | 4 | 6 (26.1) | 2 (8.7) | 0 (0.0) | 0 (0.0) |                  |             |
| Between-group comparison | | $\chi^2 = 12.4$ | $\chi^2 = 55$ | $\chi^2 = 90$ | $\chi^2 = 74$ |             |             |
| Pearson $\chi^2$ test | $P > 0.05$ | $P < 0.001$ | $P < 0.001$ | $P < 0.001$ |             |             |

Figures in parenthesis are in percentage.
Table 7: Mean change in grip power in 50 patients of *Amavata* (rheumatoid arthritis)

| Group | Site | Site | AT1 | AT2 | AT3 | Within-group comparison; paired “t”-test |
|-------|------|------|-----|-----|-----|-------------------------------------|
| I (n = 27) | R | 54.8 ± 21.8 | 81.0 ± 19.0 | 83.5 ± 19.8 | 95.5 ± 15.3 | t = 8.5, P < 0.001 |
| | L | 51.89 ± 17.7 | 69.89 ± 16.8 | 80.6 ± 14.97 | 94.59 ± 11.0 | t = 12.2, P < 0.001 |
| II (n = 23) | R | 52.2 ± 18.6 | 80.1 ± 16.1 | 80.74 ± 16.5 | 84.9 ± 13.1 | t = 7.3, P < 0.001 |
| | L | 45.35 ± 15.0 | 68.0 ± 17.9 | 78.8 ± 16.1 | 85.0 ± 14.7 | t = 9.8, P < 0.001 |

Table 8: Mean change in foot pressure in 50 patients of *Amavata* (rheumatoid arthritis)

| Groups | Site | Site | Foot pressure | AT1 | AT2 | AT3 | Within-group comparison, paired “t”-test |
|--------|------|------|---------------|-----|-----|-----|-------------------------------------|
| I (n = 27) | R | 16.48 ± 6.65 | 19.37 ± 6.92 | 19.70 ± 6.79 | 20.3 ± 6.94 | t = 6.7, P < 0.001 |
| | L | 15.78 ± 5.54 | 18.6 ± 6.10 | 19.52 ± 6.55 | 20.30 ± 6.6 | t = 6.7, P < 0.001 |
| II (n = 23) | R | 18.78 ± 8.30 | 19.87 ± 6.86 | 20.26 ± 6.80 | 21.17 ± 7.04 | t = 3.15, P < 0.001 |
| | L | 17.61 ± 6.75 | 20.09 ± 6.95 | 20.52 ± 6.56 | 20.48 ± 6.86 | t = 3.6, P < 0.001 |

Table 9: Mean change in biochemical parameters in 50 patients of *Amavata* (rheumatoid arthritis)

| Group | Components | BT | AT | AT–BT | Within-group comparison, paired “t”-test |
|-------|------------|----|----|-------|-------------------------------------|
| I (n = 27) | R.A. titer | 48.89 ± 13.6 | 29.25 ± 10.45 | 19.5 ± 4.58 | t = 12.5, P < 0.001 |
| | C.R.P. titer | 5.56 ± 2.86 | 3.42 ± 1.2 | 2.13 ± 1.6 | t = 9.9, P < 0.001 |
| | Hb% | 12.2 ± 1.98 | 12.6 ± 3.2 | 0.4 ± 1.3 | t = 1.2, P > 0.05 |
| | E.S.R. | 56.4 ± 9.5 | 26.5 ± 12.2 | 29.8 ± 8.56 | t = 12.2, P < 0.001 |
| II (n = 23) | R.A. titer | 54.5 ± 8.6 | 40.4 ± 10.56 | 14.1 ± 4.82 | t = 9.2, P < 0.001 |
| | C.R.P. titer | 5.12 ± 2.64 | 4.06 ± 2.34 | 1.06 ± 1.03 | t = 6.8, P < 0.05 |
| | Hb% | 11.8 ± 3.12 | 11.2 ± 2.66 | 0.56 ± 1.13 | t = 0.96, P > 0.05 |
| | E.S.R. | 48.8 ± 10.8 | 36.8 ± 12.5 | 12 ± 3.22 | t = 12.6, P < 0.001 |

Table 10: Comparison between the groups by unpaired ‘t’ test (biochemical parameters)

| Variables | Between-group comparison, paired “t”-test |
|-----------|-------------------------------------|
| ESR       | t = 1.02, P > 0.05 |
| CRP titer | t = 2.81, P < 0.05 |
| RA titer  | t = 4.2, P < 0.05 |
| Hb%       | t = 0.89, P > 0.05 |

Group I but no reduction in Group II was noticed, which was statistically significant. On the basis of the status of Ama, we can state that *Rasona Pinda* is a breakthrough in the pathology (*samprapti vighhtan*) of *Amavata* but Tab Nucxia is not such.

Treatment with *Rasona Pinda* produced seroconversion of the rheumatoid arthritis factor in 13 patients at the end of the 3-month period compared with no effect in the control group. The seroconversion was achieved during therapy with *Rasona Pinda*. The drug treatment group had one patient complaining of nausea but no reduction in Group II was noticed, which was statistically significant. On the basis of the status of Ama, we can state that *Rasona Pinda* is a breakthrough in the pathology (*samprapti vighhtan*) of *Amavata* but Tab Nucxia is not such.

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Curcuma longa, commonly known as Turmeric, has antiseptic and anti-inflammatory properties. Curcumin, an alkaloid isolated from this plant, has anti-inflammatory, anti-arthritic and anti-rheumatic properties.\[11,12,14\] It also has beneficial effects on platelet aggregation and vascular prostaglandin synthesis. The activation of the adrenohypophysial axis may be responsible for induction of late arthritic changes. Activated platelets are responsible for the acute inflammatory process are inhibited by the volatile oil of the plant, which could add to its anti-arthritic activity.\[19-23\]

**Probable mode of action of Rasona Pinda**

**Effect on joint pain**

Three months of treatment provided significant relief in the joint pain score in both groups. This relief in pain in group I may be due to the decreased PGE release inside the joint space. This reduction in prostaglandin may be due to the prostaglandin synthesis inhibition action of Rasona Pinda. This reduction in joint pain may be due to the Ama Pachana and Vata Shamana attained by the Ushna and Vedanasthapaka properties of the drugs used.

**Effect on joint swelling**

There was a significant reduction in the joint swelling score in both groups after 3 months of treatment. This relief in the swelling in group I may be due to the inhibition of interleukin (IL)-1, IL-6 and tumor necrosis factor-α.

**Effect on the ESR levels**

There was a significant reduction in the ESR level in all groups. This may be due to a reduction of the IL-6 activity leading to the reduced synthesis of acute-phase proteins. Ama Pachana leads to the reduction in apakva annatasa, thereby correcting the proper synthesis of different substances needed for the body. Thus, reduction in the ESR level may be due to the proper Ama Pachana attained by the treatment.

**Conclusion**

Based on the present study, it can be concluded that the Rasona Pinda group has better improvement in most of the symptoms, and it also decreased the ESR, CRP and RA titer. Rasona Pinda is extremely effective in reducing pain, swelling, tenderness and stiffness, which were the most prominent symptoms of the patients. The patients with a chronicity of more than 3 years did not show much improvement. The trial drug in this study seems to be a very good combination of Vedanashamak, Rasayana, Apgivrethadik, Shothagham and Amaapachak Dravyas. The only unwanted effect of the drug noticed during the trial was loose motion in some patients.

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हिन्दी सारांश

आमवात में रसोन पिण्ड के चिकित्सकीय प्रभाव का अध्ययन

जयप्रकाश सिंह  मीरा अन्तिवाल  अमित वेभव  जे.एस.त्रिपाठी  एस.के.तिवारी

आमवात जिसे आधुनिक विज्ञान के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार रसोन पिण्ड आमवात के अनुसार  

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