

## EFFECT OF RASNADI GUGGULU IN ASO POSITIVE PATIENTS OF RHEUMATIC FEVER

Dr. Kadambini Pradhan\*<sup>1</sup>, Prof. (Dr) Pradip Kumar Panda<sup>2</sup> and Dr. Utkalini Nayak<sup>3</sup>

<sup>1</sup>M.D. Scholar (3<sup>rd</sup> Year), <sup>2</sup>Prof. and H.O.D, <sup>3</sup>Lecturer

P.G. Dept. of Roga Nidana Evum Vikriti Vigyana, Govt. Ayurvedic College, Balangir, Odisha.

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### \*Corresponding Author

**Dr. Kadambini Pradhan**

M.D. Scholar (3<sup>rd</sup> Year),

P.G. Dept. of Roga Nidana

Evum Vikriti Vigyana,

Govt. Ayurvedic College,

Balangir, Odisha.

### ABSTRACT

**Introduction-** Antistreptolysin O (ASO or ASLO) is the antibody made against Streptolysin 'O' antigen produced by most strains of Group A and some strains of Group C & G streptococcus. ASO test mainly helps to diagnose Rheumatic fever along with other diseases. Rheumatic fever is a systemic, post-streptococcal, non suppurative inflammatory disease, principally affecting the heart, joints, central nervous system, skin and subcutaneous tissue. **Material and Methods** - 11 patients of Rheumatic fever were selected from OPD and IPD of GAC, Balangir with subjective parameters of moderate swelling of joints, mild fever, arthralgia, fatigue, weakness and objective parameters with level of ASO more than 200 IU/ml, DC, TLC, ESR,

Hb<sub>gm</sub>%, RA factor, and CRP. Patients were treated with *Rasnadi Guggulu* 2 tabs thrice a day (3gms) for 30 days. The subjective and objective parameters were assessed in 10 days interval to interpret the result by statistical evaluation. **Observation and Results** - The symptoms like moderate swelling of joints (P <0.01), fever (P <0.001), arthralgia (P <0.001), weakness and fatigue (P <0.05 each) were improved and overall development was 88.55%. It was also noticed that there was 50.03% reduction of ASO (P <0.001) after completion of clinical study. **Conclusion-** ASO positive patients suffered from Rheumatic fever showed significant improvement after receiving the Ayurvedic formulation '*Rasnadi Guggulu*' in this study. No adverse effect was observed.

**KEYWORDS:** ASO, Rheumatic fever, *Rasnadi Guggulu*.

## INTRODUCTION

Antistreptolysin O (ASO or ASLO) is the antibody made against Streptolysin 'O' antigen of most strains of Group A streptococcus and some strains of Group C & G streptococcus. This antibody cross-react with human antigens (mainly collagen) and attack heart, joint, skin, brain and subcutaneous tissue and manifesting Rheumatic fever, Glomerulonephritis, Scarlet fever, Bacterial endocarditis, Guttate psoriasis, Sinusitis etc.

Rheumatic fever (RF) is a systemic, post-streptococcal, non suppurative inflammatory disease. The disease most commonly found in developing countries due to damp and overcrowded places. In chronic stage RF develops RHD lead to incidence of cardiovascular morbidity and mortality in young people and to about 250000 deaths occurs per year worldwide.

Penicillin is an effective drug to treat RF and to decrease ASO titre, but still remains challenging due to its adverse reaction and drug sensitivity. As per classical reference, *Rasnadi Guggulu* is a miraculous *Ayurvedic* formulation used to pain, along with non suppurative inflammation disease. So it may be used as drug of choice for ASO positive patients in Rheumatic fever for clinical trial.

## MATERIAL AND METHODS

### Selection of Patients

11 patients of Rheumatic fever were selected from OPD and IPD of GAC, Balangir. They had subjective parameters like moderate swelling of joints, mild fever, arthralgia, fatigue, weakness. The patients with these symptoms and ASO level > 200 IU/ml were included in this study.

### Inclusion Criteria

Patient with more than normal ASO level (200 IU/ml), age between 6-60yrs of both sexes having clinical features of Rheumatic fever were selected for this study.

### Exclusion Criteria

Patient having systemic illness like hypertension, ESRD, Seronegative arthritis, Tuberculosis, Severe anemia, HIV and Carcinogenic growth in body, Guttate psoriasis, Chronic RHD & any other heart disease, patients taking immunosuppressive medicines, pregnant woman and lactating mother were excluded from this study

### Criteria for Investigation

DC, TLC, ESR, Hbmg%, RA factor, ASO, CRP had been advised to the selected patients.

### Selection of drug

In modern science penicillin is used to eliminate residual streptococcal infection. Aspirin and corticosteroids are used in severe arthritis condition. The formulation *Rasnadi Guggulu* has Sothahara (Anti-inflammatory), Jwarahara (Antipyretic), Vedanasthapaka (Analgesic), Rasayana (Rejuvenative), Deepana (Stomachic), Krimighna (Antibacterial) function which can be effective in treating RF. Hence *Rasnadi Guggulu* has been selected for this study.

### Assessment Criteria

The subjective parameters like swelling of joints, fever, arthralgia, fatigue, weakness and objective parameter like DC, TLC, ESR, Hbmg%, RA factor, ASO, CRP were assessed in 10 days interval and grading was noted according to patient's proforma and result was inferred by statistical evaluation.

### Treatment Criteria

Patients were advised to take *Rasnadi Guggulu* 2 tabs thrice a day (3gms) for 30 days for adult and 1 tab thrice daily(1.5gms) for 30 days for children.

### OBSERVATION AND RESULTS

It had been observed that 73% of patients relieved from their symptoms and ASO level reduced to <200 IU/ml, 18% of patients did not get relief from their symptoms but there was also marked reduction in ASO level. 9% of patient had no relief from disease.

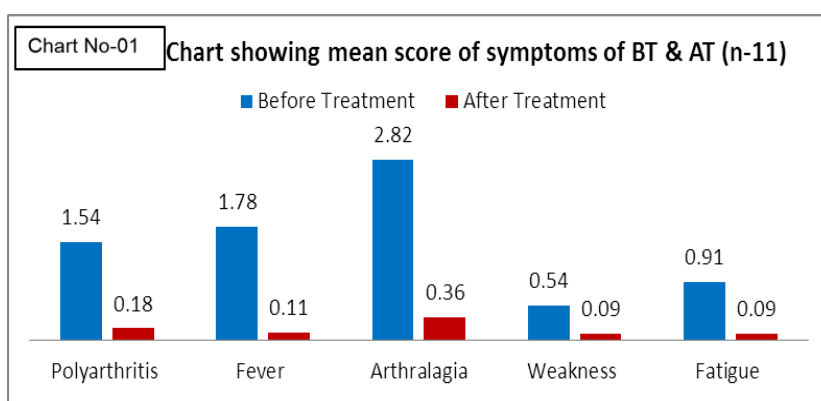
**Table No- 01: Effect of Rasnadi Guggulu in clinical features (n-11).**

Sign & Symptoms	Mean score		% of Relief	S.D. (±)	S.E. (±)	't'	P
	BT	AT					
Polyarthritis	1.54	0.18	88.31	1.15	0.35	3.88	<0.01
Fever	1.78	0.11	93.82	0.83	0.25	6.68	<0.001
Arthralgia	2.82	0.36	87.23	0.65	0.2	12.25	<0.001
Weakness	0.54	0.09	83.33	0.65	0.19	2.36	<0.05
Fatigue	0.91	0.09	90.1	1.11	0.33	2.48	<0.05
Mean percentage of relief			88.55%				

(BT- Before Treatment AT-After Treatment S.D.-Standard deviation S.E.- Standard error, P- Probability of t values at 10 degrees of freedom)

It had been observed that (Table No-01 & Chart No-01) in before treatment mean score of polyarthritis was 1.54 which reduced to 0.18 with 88.31% of relief after treatment. Initial mean score of fever was 1.78 which came down to 0.11 in after treatment with 93.82 % of relief. The mean score of arthralgia before treatment was 2.82 which was reduced to 0.36 with 87.23% of relief in after treatment. Before treatment the mean score of weakness was 0.54 which was decreased to 0.09 in after treatment. Before treatment the mean score of fatigue was 0.91 which was decreased to 0.09 in after treatment with 90.1% of relief.

As regards to statistical evaluation, the clinical features of fever and arthralgia were statistically highly significant ( $P < 0.001$ ) and polyarthritis ( $P < 0.01$ ), weakness and fatigue ( $P < 0.05$  each) were statistically less significant as compared to aforesaid features.



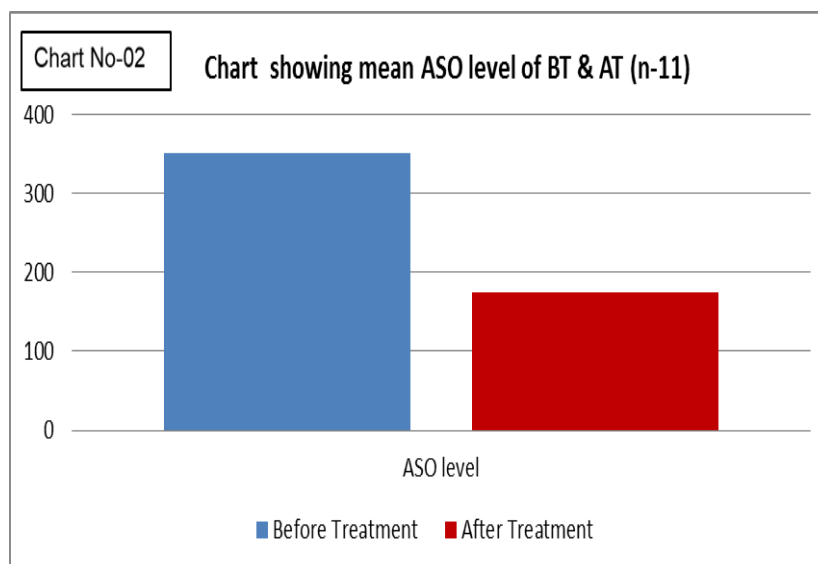
**Table No-02 Effect of Rasnadi Guggulu on Hematological and Biochemical values (n-11).**

Sign & Symptoms	Mean score		% of Relief	S.D. ( $\pm$ )	S.E. ( $\pm$ )	't'	P
	BT	AT					
ASO	350.63	175.18	50.03	82.79	24.94	7.03	<0.001
TLC	7172.73	6745.45	6	733	220.78	1.93	<0.10
ESR	55	38.27	30.41	8.43	2.53	6.60	<0.001
Hbgm%	12.14	12.32	Increased by 0.18gm%	0.24	0.07	2.57	<0.05

(BT- Before Treatment AT-After Treatment S.D.-Standard deviation S.E.-

Standard error, P- Probability of t values at 10 degrees of freedom)

It has been observed (Table No 02 & Chart No-02) that the initial mean ASO level was 350.63 which reduced to 175.18 with 50.03% of relief after treatment and it was statistically highly significant ( $P < 0.001$ ). It was observed that TLC was reduced with 6% of relief which was statistically insignificant ( $P < 0.10$ ). The ESR was decreased from 55 to 38.27 with 30.41 % of relief it was statistically highly significant ( $P < 0.001$ ). There was mean increase in Hbgm% by 0.18gm% which was statistically significant ( $P < 0.05$ ).



## DISCUSSION

The trial formulation *Rasnadi Guggulu* had drugs like Rasna, Guduchi, Erandamoola, Devadaru, Sunthi, Sudha Guggulu which have Sothahara, Jwarahara, Vedanasthapaka, Rasayana, Deepana, Krimighna, Kusthaghna, Shulahara etc properties. Among these 67% of drugs have Tikta, Kasaya Rasa which help to alleviate Pitta Dosa and 67% of drugs also have Katu Rasa that alleviate Kapha Dosa. Ushna veerya of all drugs of *Rasnadi Guggulu* decreases the pain alleviating Vata Dosa. 50% of drugs have Vatakaphahara property and other 50% of drugs have Tridoshasamaka property which helps to treat the disease. The properties and action of the drugs of *Rasnadi Guggulu* are as follows.

**Table No 03: Properties and action of drugs of *Rasnadi Guggulu*.**

Name	Rasa	Guna	Veerya	Vipaka	Karma
Rasna	Tikta	Guru	Usna	Katu	Vatakaphahara, Sophahara, Vatasulahara, Jwarahara, Vishahara (Prabhava), Sidhmahara,
Guggulu	Tikta, Katu, Madhura, Kasaya	Tikshna, Laghu, Rukshya, Vishada, Sara, Sugandhi	Usna	Katu	Tridoshasamaka (Prabhava), Amavataharam, Balya, Rasayana, Deepana, Vranahara, Sophahara, Vedanasthapaka
Eranda Moola	Madhura, Anurasa-Katu, Kasaya	Snigdha, Tikshna, Sukshma	Usna	Madhura	Tridoshasamaka, Shulahara, Sothahara, Jwarahara, Kusthaghna.
Devadaru	Tikta, Katu, Kasaya	Laghu, Snigdha	Usna	Katu	Vatakaphahara, Sothahara, Vedanasthapana Jwaraghna,.
Sunthi	Katu	Laghu, Snigdha	Usna	Madhura	Vatakaphahara, Deepana, Pachaka, Shulahara,
Guduchi	Tikta, Kasaya	Guru, Snigdha	Usna	Madhura	Tridoshasamaka, Rasayana, Jwarahara, Deepana, Hrudya, Kusthaghna, Balya, Krimighna.

### Contemporary Pharmacology

**Rasna-** The aqueous extract of Rasna significantly inhibited the increased serum amino transferase activity in arthritic animals similar to hydrocortisone. The aqueous and acetone extracts of the root, showed significant anti-inflammatory activity.<sup>[11]</sup> It was also found that 50% ethanolic extract of *Pluchea lanceolata* cause immunosuppression in delayed hypersensitivity (in vitro), phagocytosis (in vivo) by inhibiting Th1 cytokines.<sup>[10]</sup>

**Guggulu-** NF kappa B is closely linked with inflammatory diseases. Guggulusterone of Guggulu suppress activation of constitutive NF-kappa B expressed in most tumour cells. Guggulusterone also suppress NF- kappa B regulated gene products. The essential oil, chloroform extract and 7 sesquiterpenoids compounds of Guggulu showed a wide range of inhibiting activity against both Gram (+) and Gram (-) bacteria. Guggulu also has immunomodulatory properties. It normalizes leucocyte function by improving phagocytosis.<sup>[13]</sup>

**Eranda-** Petroleum ether extract of the root bark of Eranda shows anti-inflammatory activity against formaldehyde induced arthritis. It inhibits the secondary phase of inflammation and it is known that only specific anti-inflammatory agent act on secondary phase, it is considered as specific anti-inflammatory agent.<sup>[11]</sup>

**Devadaru-** The volatile oil from wood of Devadaru exhibited anti-inflammatory activity by blocking action and synthesis of prostaglandins. The water extract of *Cedrus Deodara* also has antibacterial property because it causes lysis of bacterial structure and changes in cellular composition. It has antiseptic activity also. The oil of Devadaru has immunomodulatory action.<sup>[14]</sup> The oil also showed analgesic activity against acetic acid- induced writhing and hot plate reaction in mice.<sup>[11]</sup>

**Sunthi-** It is considered that Sunthi is effective in reducing carrageenan induced edema in rats. It is thought that these anti-inflammatory actions are the result of inhibition of prostaglandin release. It is found that 6-gingerol and 6-shagol have analgesic and antipyretic activities. According to a study on rat models ginger oil effectively reduced swelling and inflammation in the arthritic joints.<sup>[11]</sup>

**Guduchi-** Guduchi stimulates of T and B lymphocytes and also exhibits TH-1 immune response which results in enhanced macrophage phagocytosis and increase production of

nitric acid which ultimately causes immunomodulation. <sup>[10]</sup> Cordifolioside A, Tinocordiside, Syringin of Guduchi have immunomodulatory activity. The constituents of Guduchi like Berberine, choline, Tembetarine, Tinosporin, Palmitine, Jatrorrhizine are neuroprotective which may decrease the chance of involvement of CNS in RF. Furanolactone, Tinosporin, Tinosporide, Jateorine, Columbin, Clerodane derivatives of Guduchi have anti-inflammatory activity. Furanolactone, Tinosporin, Tinosporide, Jateorine, Columbin, Clerodane derivatives have cardioprotective effect which helps to decrease the cardiac problem in RF. Antiarthritic activity of constituent of Guduchi like B-sitosterol, Makisterone A, Giloinsterol Steroids improve the polyarthritis condition. <sup>[12]</sup>

The drugs like Devadaru, Guggulu, Guduchi and Rasna has immunomodulation function which decrease the ASO titre as it is an antibody produced against Streptolysin 'O'. Drugs present in Rasnadi Guggulu have anti-inflammatory, analgesic, antipyretic, antibacterial, antiarthritic activities which help to improve the condition of patient and to cure the disease.

## CONCLUSION

ASO positive patients suffered from Rheumatic fever showed significant improvement in subjective and objective parameters after receiving the *Ayurvedic* formulation '*Rasnadi Guggulu*'. No adverse effect was observed. Study can be done for more period of time with large samples and more scientific multidimensional integrated approach with specific markers for better result to human society.

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