

# INPLASY

## The Role of Serum Galectin-1 as a Biomarker for Assessing Disease Activity and Predicting Outcomes in Rheumatoid Arthritis: A Systematic Review and Meta Analysis

INPLASY202460103

doi: 10.37766/inplasy2024.6.0103

Received: 25 June 2024

Published: 25 June 2024

Zhu, CY; Li, YS; Wang, HL; Yang, XM; Wang, QQ.

**Corresponding author:**  
Qingqing Wang

wangqing0407@163.com

**Author Affiliation:**  
None.

### ADMINISTRATIVE INFORMATION

**Support** - N/A.

**Review Stage at time of this submission** - Completed but not published.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202460103

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 25 June 2024 and was last updated on 25 June 2024.

### INTRODUCTION

**Review question / Objective** We searched PubMed, Web of Science, and Cochrane Library databases from inception until March 2024. After applying preset inclusion criteria, we finally selected 5 observational studies for analysis. Risk bias in the included literature was judged using the Cochrane Handbook criteria, and data analysis was carried out using RevMan 5.3. Five articles were suitable for analysis including 296 RA patients and 185 healthy controls. The results demonstrated the significant role of Gal-1 in the diagnosis of RA and its correlation with disease activity. We evaluated the quality of the literature included and created graphical representations and risk summaries based on the risk of bias. Gal-1 holds pronounced prospective in the diagnosis and treatment of RA. By monitoring the expression level of Gal-1, early diagnosis and assessment of disease activity can be achieved,

thereby improving treatment outcomes for patients.

**Condition being studied** Galectin-1 (Gal-1), a potential diagnostic marker, has garnered significant attention in the research on rheumatoid arthritis. The aim of the study was to systematically review and perform a meta-analysis to explore the significance of serum Gal-1 as a biomarker for assessing disease activity and predicting the prognosis of RA.

### METHODS

**Search strategy** "Rheumatoid Arthritis", "Arthritis, Rheumatoid", "RA", "Galectin-1", "Galactoside-Binding Lectin 1", "Gal-1".

**Participant or population** (1) Patients diagnosed with rheumatoid arthritis. (2) Age  $\geq$  18 years old. (3) Observational studies. The following articles were

excluded: (1) review articles; (2) duplicate articles; (3) case reports and letters; and (4) articles lacking usable information.

**Intervention** N/A.

**Comparator** This meta-analysis included a total of 5 publications with 296 RA patients and 185 healthy controls.

**Study designs to be included** We searched PubMed, Web of Science, and Cochrane Library databases from inception until March 2024. After applying preset inclusion criteria, we finally selected 5 observational studies for analysis. Risk bias in the included literature was judged using the Cochrane Handbook criteria, and data analysis was carried out using RevMan 5.3.

**Eligibility criteria** N/A.

**Information sources** PubMed, Web of Science, and Cochrane Library databases.

**Main outcome(s)** In conclusion, our study elucidates the connection between Gal-1 expression levels and disease activity in RA patients. Gal-1 has significant potential in the diagnosis and treatment of RA. By monitoring the expression level of Gal-1, early diagnosis and assessment of disease activity can be achieved, leading to improved treatment outcomes for patients. However, further research is still needed to validate this finding and to conduct in-depth investigations into the mechanism of action of Gal-1 in RA, ultimately enhancing the diagnosis and treatment of RA patients.

**Quality assessment / Risk of bias analysis** The study quality was measured using the Cochrane risk of bias tool. All studies provided a detailed description of random sequence generation. Moreover, each article reported comprehensive research data and addressed instances of selective reporting. Most of the included articles offered data on the blinding of outcome assessment and described any instances of incomplete outcome data.

**Strategy of data synthesis** In our analysis, we applied Fisher's S-Z transformation to the correlation coefficients reported in the article. Subsequently, we used the inverse variance method to calculate the corresponding 95% CIs and combined the correlation coefficients to obtain the final correlation coefficient value. The association between Gal-1 levels and disease

activity score (DAS)- Erythrocyte Sedimentation Rate (ESR) was evaluated in two studies.

**Subgroup analysis** The association between Gal-1 levels and disease activity score (DAS)- Erythrocyte Sedimentation Rate (ESR) was evaluated in two studies.

**Sensitivity analysis** N/A.

**Country(ies) involved** China.

**Keywords** Galectin-1; Disease Activity; Rheumatoid Arthritis; Biomarker; Meta Analysis.

**Contributions of each author**

Author 1 - Chunyan Zhu - Methodology, Investigation, Data curation, original draft.

Email: zhuchunyan505@163.com

Author 2 - Methodology, Investigation, Data curation, original draft.

Email: iyushi2304@163.com

Author 3 - Honglei Wang - Writing, review & editing.

Email: 982307780@qq.com

Author 4 - Xiaomei Yang - Review & editing.

Email: 1843592708@qq.com

Author 5 - Qingqing Wang - Idea, Supervision, review & editing.

Email: wangqing0407@163.com