# ROLE OF TOTAL AND LIPID -BOUND SIALIC ACID IN DISCRIMINATIG ACTIVITES OF RHEUMTOID ARTHRIRIS PATIENTS

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**Abstract:**

**Background:** It is known that total serum sialic acid (TSA) and lipid bound sialic acid (LSA) levels may be altered by different types of disease included Rheumatoid Arthritis (RA) and inflammatory disease, therefore the evaluation of these compounds in serum patients with RA may elucidate the relationship between its levels and disease activity.

**Aim:** This study was designed to evaluate the clinical application of serum total sialic acid (TSA) and lipid bound sialic acid (LSA) levels in patients with RA, considering the disease activity and compare the levels with a normal group.

**Method:** The study was carried out on ninety-seven healthy and sick adults. Fifty-four (37 female, 17 male) patients with RA disease. Of them 29 patients (21female, 8 male) had low disease activity [age range 32-65 years] and twenty-five patients (16 female, 9 male) had high disease activity [age range 22-52 years]. They were compared with 43 healthy persons [age range 19-64 years]. Colorimetric methods were used for determination TSA and LSA in serum samples.

**Results:** Total sialic acid and lipid bound sialic acid levels in serum patients with RA show significantly increased when compared to normal group, and more increased in patients with high activity disease.

**Conclusions:** Based on our results, serum TSA and LSA level would be used as a good marker for discriminating between activities of RA disease.

**Key words:** Rheumatoid Arthritis, sialic acid, and lipid bound sialic acid.

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## Introduction

Sialic acid (SA), a class of important ketoses that contain nine-carbon atom, is an acetylated derivative of neuraminic acid (2-keto-5-amino-3, 5-dideoxy-d-nonulosonic acid)[1]. Sialic acid is widely distributed in nature as non-reducing termini of glycoprotein and glycolipids. About 70% of the total sialic acid (TSA) of eukaryotic cell is found on the cell surface and the remainder is distributed primarily in the endoplasmic reticulum, mitochondria and lysosomes[2].

Because of their acidic nature, SA impart a negative charge to the cell surface and are important in cell-to-cell or cell-to-matrix interactions.SA residues on the cell surface may also be involved in masking cell surface antigens and may serve as receptors for lectins, virus particles, some hormones and antibodies[3].However, they can also act as critical components of ligands recognized by a varity of animal, plant and microbial proteins termed sialic acid binding lectins[4].

In human, SA is present in Alpha-1-acid glycoprotein(AAG), haptoglobin, ceruloplasmin and transferrin , which are acute phase rectants[5,6]. Sialic acid levels vary physiologically with age, but their levels may also be influenced by such conditions as inflammation, neoplastic tumor or in born genetic disorders, which cause abnormal sialic acid metabolism[7].

Marked elevation of serum (TSA and LSA) that correlate with the clinical activity of a disease have been documented in many pathological states, included cardiovascular disease, different types of cancer and inflammatory reaction, where the

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