

## 23. THE ROLE OF JAK-INHIBITORS IN THE TREATMENT OF RHEUMATOID ARTHRITIS



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**Introduction.** Rheumatoid arthritis is a systemic chronic autoimmune inflammatory disease characterized by persistent destructive synovitis with extra-articular manifestations. Despite the recent development and recommended use of inhibitors of TNF and IL-6, as well as the B cell depletion of CD20 cells as remedies for RA, a large number of patients remain unresponsive and intolerable to these medications. JAK-inhibitors are the newest drugs with a targeted mechanism of action and promising clinical results.

**Aim of study.** To elucidate the role of JAK-inhibitors as the long-term method and to evaluate the possible complications associated with this type of biological DMARD in order to identify clinically effective treatment for rheumatoid arthritis.

**Methods and materials.** The scientific articles ranging from 2000-2022 published in PubMed, NCBI, BioMed Central databases, describing the nature and role JAK-inhibitors, the biochemical mechanisms and physiological effects were explored using key phrases “Janus-kinase receptors”, “JAK-inhibitors”, “rheumatoid arthritis”, “monotherapy”.

**Results.** According to EULAR 2019 guidelines, JAK-inhibitors represents the 2nd line medication recommended in refractory to MTX monotherapy, moderate or high disease activity. Tofacitinib, an inhibitor of JAK1/JAK3, have shown response rates that were significantly higher compared to MTX monotherapy. The Tofacitinib + MTX combination was noninferior, establishing the same results as the standard adalimumab + MTX combination cure. Applying the modified van der Heijde Total Sharp Score, the monotherapy with Tofacitinib overcame MTX monotherapy in limiting the progression damage. The blockage of IL-6 by targeting JAK-STAT3 induced by Tofacitinib has diminished the pain within 24h. The published data show that frequent side effects of JAK-inhibitors were the infections of upper/lower respiratory and urinary tracts, cytopenia being caused by JAK-inhibitors that act through JAK-2 pathway.

**Conclusion.** The JAK-inhibitors have shown the same efficiency and safety profile as other types of bDMARDs. Oral administration, as well as early relief of pain prove JAK-inhibitors as promising treatment option increasingly used for proper medication of rheumatoid arthritis.