Several Metabolites Associated With Sustained Drug-Free Remission in RA

but also on the initiated treatment.

In patients with [**rheumatoid arthritis**](https://www.rheumatologyadvisor.com/rheumatoid-arthritis/rheumatoid-arthritis-rituximab-biosimilar-safety-assessed/article/813411/) (RA) who are treated to target with a tocilizumab- or methotrexate-based regimen, there are several metabolites associated with achieving sustained drug-free remission, according to study data published in *Arthritis Research & Therapy*.

The study included participants with RA who initiated treatment with methotrexate, tocilizumab, or a combination of both medications and had achieved remission (n=37), as well as controls who had never achieved drug-free status (n=23).

The researchers obtained metabolomic measurements using mass spectrometry on oxidative stress, amine, and oxyplin platforms covering various compounds. They performed partial least square discriminant analyses to identify relevant metabolites. In addition, they performed integrative analyses to correlate previously-identified transcripts and proteins with the relevant metabolites.

The researchers found 19 relevant metabolites for tocilizumab plus methotrexate, 13 for tocilizumab, and 12 for methotrexate and used these for pathway analyses.

The most significant pathway in the tocilizumab plus methotrexate strategy was “histidine metabolism” (*P*<.001). In the tocilizumab strategy, the most significant pathway was “arachidonic acid metabolism” (*P*=.018). In the methotrexate strategy, the most significant pathway was “arginine and proline metabolism” (*P*=.022).

The researchers found that these pathways have treatment-specific drug interactions with metabolites that affect either the signaling of interleukin-6, which is inhibited by tocilizumab, or affecting protein synthesis from amino acids, which is inhibited by methotrexate.

 “In line with our previous work on the analyses of transcripts and proteins, performed within the same patients, the identified metabolic pathways were shown to be specific for the treatment that was initiated,” the researchers wrote. “These results might provide further insight into the role of predisposing biomarkers for eventually achieving [sustained drug-free remission] in early RA.”

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**Reference**

Teitsma XM, Yang W, Jacobs JWG, et al. [**Baseline metabolic profiles of early rheumatoid arthritis patients achieving sustained drug-free remission after initiating treat-to-target tocilizumab methotrexate, or the combination: insights from systems biology [published online October 15, 2018].**](https://arthritis-research.biomedcentral.com/articles/10.1186/s13075-018-1729-2)  *Arthritis Res Ther*. doi:10.1186/s13075-018-1729-2