



# Trends in Molecular Sciences

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## Link Between Cholesterol Compound and Multiple Sclerosis Unlikely, Researchers Say

***New research findings appearing in the January Journal of Lipid Research indicate that compounds called oxysterols are not present in any significant amount in multiple sclerosis patients, contradicting a previous study that suggested that some of these cholesterol metabolites were associated with MS and could be used as diagnostic tools in the clinic.***

Oxysterols are somewhat controversial in science; while some laboratory experiments suggest these steroid molecules may be biologically important, they are present in only trace amounts in the blood, and studies in living animals or humans have not convincingly proven a definitive role.

Therefore, there was great interest when a study published last year in the journal *Nature Immunology* reported that two oxysterols, known as 15HC and 15KC, were increased more than three-fold in the blood of MS patients, and that these oxysterols could be associated with the development of the disease.

Spurred by those findings, Ingemar Björkhem and colleagues at Sweden's Karolinska Institutet decided to perform their own analysis of blood samples using a combination of gas chromatography and mass spectrometry, which vaporizes the samples and separates the component parts to allow for a thorough separation of all molecules; thus they could identify 15HC and 15KC levels even at low concentrations.

Despite numerous efforts, though, Björkhem and colleagues failed to find any meaningful 15HC or 15KC oxysterol levels in blood of healthy individuals or MS patients.

To ensure the oxysterols were not being lost or metabolized somewhere along the experimental chain, they also ran blood samples with pre-loaded oxysterols and recovered almost 100 percent of the loaded amount, demonstrating that the protocol was not the problem; any 15HC or 15KC present in the patient samples would have been found.

Björkhem notes that given the conflicting results of recent studies, the potential role of oxysterols in multiple sclerosis needs to be reconsidered.

In a commentary accompanying the new paper by Björkhem's team, William Griffiths and Yuqin Wang of the U.K.'s Swansea University, who were not involved in either study, said they suspect the original research team who reported the oxysterol discovery in 2009 "incorrectly identified [the compounds] in plasma, in which case their data would suggest that some unidentified lipids are increased in the circulation of patients with (MS)."

"It is important that these compounds are now identified," they added.

W. J. Griffiths, Y. Wang. Are 15-oxygenated sterols present in the human circulation? *The Journal of Lipid Research*, 2010; 52 (1): 4 DOI: 10.1194/jlr.E012088