

# The protein profile of restless leg syndrome

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A protein profile of people with restless leg syndrome (RLS), identifies factors behind disrupted sleep, cardiovascular dysfunction and pain finds research in BioMed Central's open access journal *Fluids and Barriers of the CNS*. The research gives insights into the disorder, and could be useful in the development of new treatments.

It is not completely clear what causes RLS, also known as Willis Ekblom disease (WED), but in some people it is associated with iron deficiency in the brain, [kidney failure](#), or low levels of the 'pleasure' neurotransmitter dopamine. It can also occur during pregnancy. It affects between 5 and 10% of the population and symptoms, which can range in severity, including sleep deprivation and decreased ability to work can lead to a reduction in quality of life. It is also a risk factor for cardiovascular disease.

Comparing the cerebral spinal fluid (CSF) of women with and without RLS, researchers from the US and Korea discovered there was a significantly altered level of six specific proteins with RLS. Dr Stephanie Patton from Penn State University who led this study explained, "Our results reveal a protein profile in the RLS/WED CSF that is consistent with iron deficiency, dopamine dysregulation and inflammation."

These proteins include a protein which transports vitamin D into cells and is involved in the regulation of [dopamine levels](#), cystatin C – a biomarker for pain found in people with sciatica and during labor, and a [neuromodulator](#) (PTGDS) known to be involved in [sleep disturbances](#).

Levels of apolipoprotein (Apo) A1 were lower with RLS and may be related to the increased risk of cardiovascular disease.

The importance of iron's role in RLS is highlighted by the presence of B-hemoglobin in the CSF of women with RLS, while levels of a glycoprotein (AGP) were reduced. AGP is involved in response to inflammatory damage and requires the presence of iron for it to be protective.

Dr Stephanie Patton continued, "Although a small study, this CSF protein profile is consistent with observed neuropathological findings and supports existing hypotheses about the biology behind RLS/WED, which could prove clinically important in developing new treatments."

**More information:** Proteomic analysis of the cerebrospinal fluid of patients with restless legs syndrome/Willis-Ekbom disease, Stephanie M Patton, Yong Won Cho, Thomas W Clardy, Richard P Allen, Christopher J Earley and James R Connor, *Fluids and Barriers of the CNS*, 2013, 10:20 [doi:10.1186/2045-8118-10-20](https://doi.org/10.1186/2045-8118-10-20)

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