

# Researchers confirm the biochemical cause of seasonal depression

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New research confirms why some people suffer from the winter blues while others get through the winter without any problems. A longitudinal study from a group of researchers from the University of Copenhagen has found that that people with Seasonal Affective Disorder (SAD) show significant seasonal differences in the way they regulate the neurotransmitter serotonin in comparison to the majority of the population. This work is being presented at the ECNP congress in Berlin.

SAD affects a significant amount of people as daylight levels drop in autumn. At Northern European latitudes (for example all of Scandinavia, Glasgow and Moscow) around 1 person in 6 suffers from SAD.

The researchers scanned 11 SAD patients and 23 healthy individuals using Positron Emission Tomography; they were able to show significant summer to winter differences in the levels of the [serotonin transporter](#) (SERT) protein; SAD patients showed higher levels of SERT in the winter months, corresponding to a greater removal of serotonin in winter.

Serotonin (also known as 5-HT) is a neurotransmitter which affects mood, in fact many anti-depressant drugs, such as SSRIs (Selective Serotonin Reuptake Inhibitors, such as Prozac) work by allowing serotonin to be retained in the synapse where it exerts its effects.

Lead researcher, Brenda Mc Mahon said:

"We believe that we have found the dial the brain turns when it has to adjust serotonin to the changing seasons. The serotonin transporter (SERT) carries serotonin back into the nerve cells where it is not active, so the higher the SERT activity the lower the activity of serotonin. Sunlight keeps this setting naturally low, but when the nights grow longer during the autumn, the SERT levels increase, resulting in diminishing active serotonin levels. Many individuals are not really affected by SAD, and we have found that these people don't have this increase in SERT activity, so their active [serotonin](#) levels remain high throughout the winter".

The SAD patients had an average 5% higher SERT level in the winter compared to the summer, whereas the healthy participants on average showed no significant change.

Commenting for the ECNP, Professor Siegfried Kasper (Vienna) said:

"SERT fluctuations associated with SAD have been seen in previous studies, but this is the first study to follow patients through summer and winter comparisons. It seems to offer confirmation that SERT is associated with SAD"

Provided by European College of Neuropsychopharmacology

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