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Researchers at the MedUni Vienna have demonstrated the possibility of using a blood test to detect depression. While blood tests for mental illnesses have until recently been regarded as impossible, a recent study clearly indicates that, in principle, depression can in fact be diagnosed in this way and this could become reality in the not too distant future.

Serotonin transporter (SERT) is a protein in the cell membrane that facilitates the transport of the neurotransmitter serotonin (popularly known as the "happiness hormone") into the cell. In the brain, serotonin transporter regulates neural depression networks. Depressive conditions can frequently be caused by a lack of serotonin. As a result, the serotonin transporter is also the point of action for the major antidepressant drugs.

The serotonin transporter, however, also occurs in large quantities in numerous other organs such as the intestines or blood. Recent studies have shown that the serotonin transporter in the blood works in exactly the same way as in the brain. In the blood, it ensures that blood platelets maintain the appropriate concentration of serotonin in the blood plasma.

Researchers at the MedUni Vienna have now used functional magnetic resonance imaging of the brain and pharmacological investigations to demonstrate that there is a close relationship between the speed of the serotonin uptake in blood platelets and the function of a depression network in the brain.

This network is termed the "default mode network" because it is primarily active at rest and processes content with strong self-reference. Findings from recent years have also demonstrated that it is actively suppressed during complex thought processes, which is essential for adequate levels of concentration. Interestingly, patients with depression find it difficult to suppress this network during thought processes, leading to negative thoughts and ruminations as well as poor concentration.

"This is the first study that has been able to predict the activity of a major depression network in the brain using a blood test. While blood tests for mental illnesses have until recently been regarded as impossible, this study clearly shows that a blood test is possible in principle for diagnosing depression and could become reality in the not too distant future," explains study leader Lukas Pezawas from the Department of Biological Psychiatry at the University Department of Psychiatry and Psychotherapy within the MedUni Vienna. This result means that the diagnosis of depression through blood tests could become reality in the not too distant future.

More information: Scharinger C, Rabl U, Kasess CH, Meyer BM, Hofmaier T, Diers K, Bartova L, Pail G, Huf W, Uzelac Z, Hartinger B, Kalcher K, Perkmann T, Haslacher H, Meyer-Lindenberg A, Kasper S, Freissmuth M, Windischberger C, Willeit M, Lanzenberger R, Esterbauer H, Brocke B, Moser E, Sitte HH, Pezawas L. (2014) P"latelet serotonin transporter function predicts default-mode network activity." *PLoS One* 9: e92543.

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