

# Urine Test Could Diagnose Depression, Anxiety



By Alex Berezow — September 29, 2018



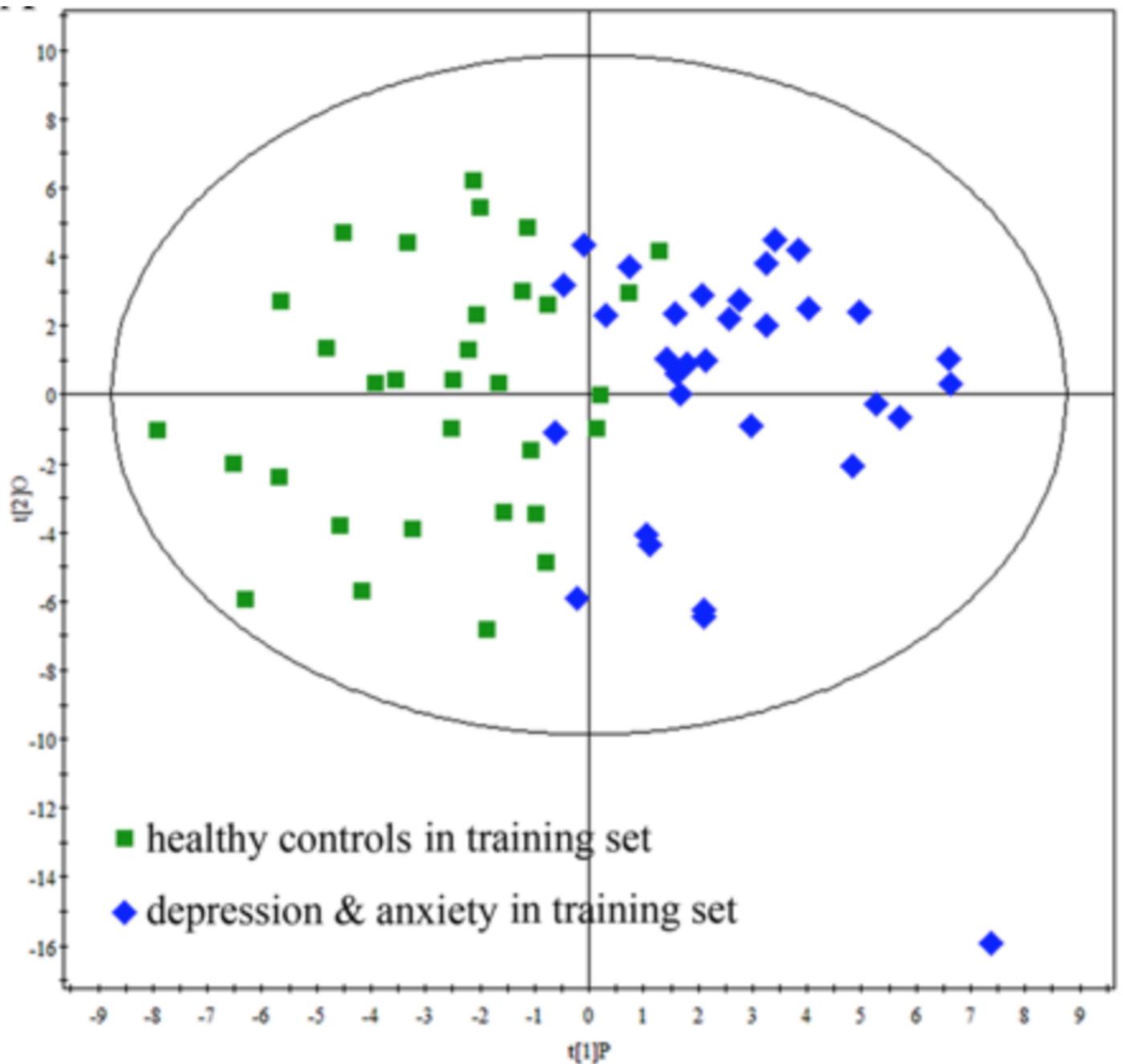
Credit: Storyblocks [1]

Depression and anxiety are not always easy to detect.

The obvious symptoms, such as persistent sadness or worry, may not be present. Instead, a person may exhibit insidious symptoms, like chronic indecision or excessive sleepiness. Diagnosis usually requires a psychologist. Besides being time consuming and inconvenient, diagnostic criteria are rather subjective. Therefore, an objective and easily detectable biomarker for depression and anxiety would be preferable.

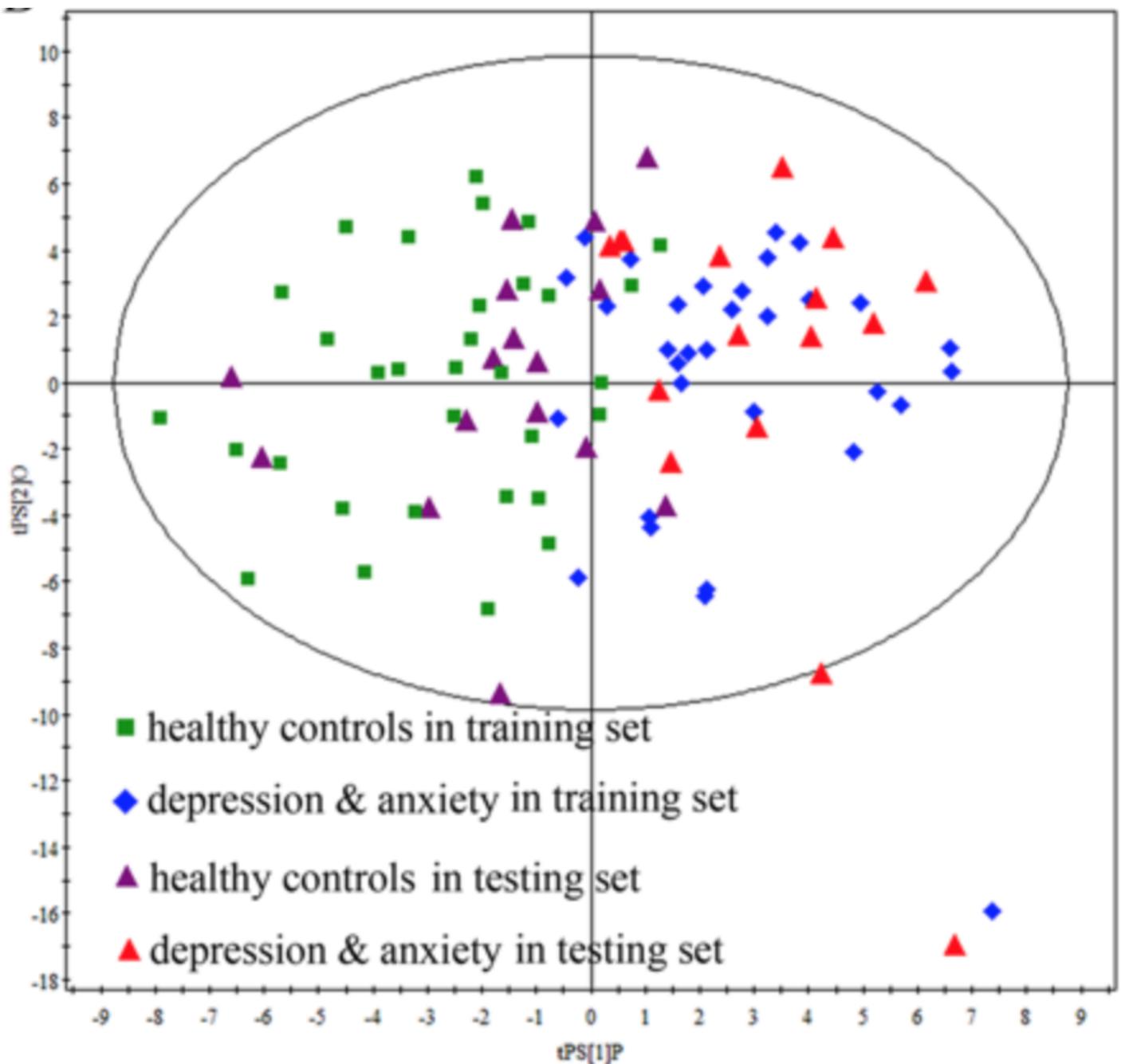
Now, a team of Chinese researchers believe they have discovered one using a urine test. Their results are reported in the journal *Translational Psychiatry*.

The researchers began by collecting urine samples from 32 patients suffering from depression and anxiety and from 32 healthy controls who were matched according to age, sex, and body mass index. The urine was analyzed using standard chemistry techniques to determine if differences in the concentrations of various metabolites could be used to discriminate healthy people from patients with depression/anxiety. Indeed, the data showed that they could:



As shown, the green squares represent healthy controls, while the blue diamonds represent patients with depression/anxiety. Thus, in their training data set of 64 total individuals, the authors could fairly easily discriminate between the two groups.

The next step was to validate their model with more samples. So, the authors collected urine from another 16 healthy controls and 16 patients with depression/anxiety, and they did their analysis again:



Once again, their ability to discriminate healthy people from patients with depression/anxiety -- using only metabolites detected in urine samples -- was confirmed. All 16 patients with depression/anxiety were correctly identified, while 13 of 16 healthy controls were properly identified.

For a test like this to be of any practical use in the laboratory, it cannot test dozens of metabolites. So, the authors narrowed down their list of metabolites to just four: N-methylnicotinamide, aminomalonic acid, azelaic acid and hippuric acid. Using just these four metabolites, the authors had a predictive accuracy of 90% in the validation data set of 32 individuals.

If the authors' results continue to be confirmed, the next step surely should be commercialization. A quick urine test for general practitioners to screen patients they suspect of suffering from depression and anxiety could be a tremendous boon to public health.

[Source](#) [2]: Jian-jun Chen, Shun-Jie Bai, Wen-wen Li, Chan-juan Zhou, Peng Zheng, Liang Fang,

Hai-yang Wang, Yi-yun Liu & Peng Xie. "Urinary biomarker panel for diagnosing patients with depression and anxiety disorders." *Translational Psychiatry* 8, Article number: 192. Published: 19-Sept-2018. doi: 10.1038/s41398-018-0245-0

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[2] <https://www.nature.com/articles/s41398-018-0245-0>