Could bacteria in your gut help spur depression?

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Depression may be a disorder of the brain, but new research adds to

evidence that it also involves the gut.

While depression is complex, recent research has been pointing to a role for bacteria that dwell in the gut—suggesting that certain bacterial strains might feed depression symptoms, while others might be protective.

In a pair of new studies, researchers identified 13 groups of bacteria that were related to the odds of adults having depression symptoms. In some cases, the gut bacteria were depleted in people with depression, while in others they were present at relatively high levels.

However, experts stressed that the findings do not prove that any of the gut bugs cause or protect against depression. So, it's far too soon to recommend probiotics as a depression treatment.

In fact, gut bacteria seem to change in their diversity and abundance when any chronic disease is present, said Dr. Emeran Mayer, director of the Oppenheimer Center for Neurobiology of Stress at the University of California, Los Angeles David Geffen School of Medicine.

Mayer, who was not involved in the research, is also the author of the book "The Mind-Gut Connection." He said the findings may reflect a "general disease effect," rather than gut bacteria patterns that are specific to depression.

The research, published Dec. 6 in the journal *Nature Communications,* is the latest to dig into the question of whether the gut microbiome is somehow involved in depression.

The gut microbiome refers to the trillions of bacteria and other microorganisms that live in the digestive system. Those microbes are believed to do much more than aid in digestion, however. Studies show

they are involved in everything from immune system defenses to producing vitamins, anti-inflammatory compounds and even chemicals that influence the brain.

Some research has linked certain gut bacteria to higher or lower odds of depression.

The new findings confirm that those microbes are tied to depression—and identify some new ones, said study co-author Najaf Amin.

Beyond that, the study included people of diverse ethnic backgrounds. And it appeared the microbiome-depression links were consistent across those groups, said Amin, of Oxford University in England.

She, too, said the findings do not prove cause and effect.

Depression can, for instance, cause people to eat poorly—and diet is a primary factor in the makeup of a person's gut bacteria. So, that could be one explanation for the results, Amin said.

At the same time, the notion that gut bacteria could affect depression risk is not far-fetched. According to Amin's team, some bacteria in the groups they identified help synthesize certain chemicals that affect the brain—such as butyrate, glutamate and serotonin.

And whether gut bacteria actually help cause depression or not, it's still important to know whether they correlate with the disorder, according to the researchers. That could help in diagnosis, they say.

"What we are looking for is to identify the bacteria that associate with major depression," Amin said. "This will help us in identifying a biomarker for depression that can be used as an objective measurement

in identifying cases—which is lacking at the moment for depression."

The findings come from two studies. One involved nearly 2,600 Dutch adults who were screened for depression and gave stool samples to be analyzed for their bacterial makeup. The other included just over 3,000 Dutch adults living in the same urban area; many were of Ghanaian, Moroccan, Surinamese or Turkish descent.

In all, the researchers found 13 bacterial groups that correlated with participants' depression scores. In most cases, the gut microbes were decreased in people with depression. But some bacterial groups, like *Sellimonas* and *Eggerthella,* were present in greater abundance when people were depressed.

If future research proves that any bacterial imbalances actually help cause depression, that could form the basis for new treatments, Amin said—such as probiotics or prebiotics.

Mayer, however, doubted the findings are "clinically relevant." For one, he said, the study implicates large groups of gut bacteria, each of which contain multiple strains—which in many cases have opposite functions.

He also said that "microbiome science" is moving away from focusing on the relative abundance of different gut bacteria, and toward more nuanced measures of how the gut microbiome is functioning.

More information: The Harvard School of Public Health has more on the gut microbiome.

Radjabzadeh, D. et al., Gut microbiome-wide association study of depressive symptoms, *Nat Commun* (2022). doi.org/10.1038/s41467-022-34502-3

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