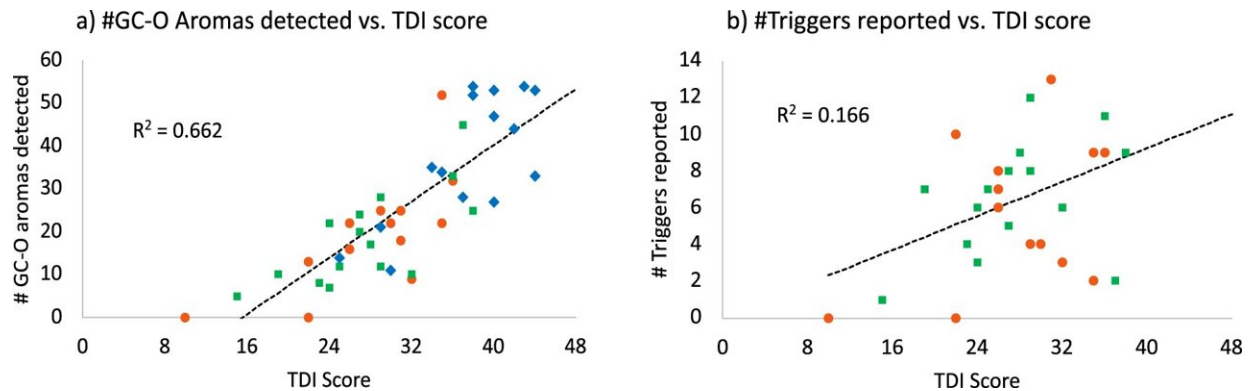


Researchers find cause of disordered smell

May 27 2022



Correlations between olfactory function and GC-O. a Correlation between TDI score (Threshold, Discrimination, and Identification Sniffin' Sticks test score) and number of aromas detected at the GC odour-port. b Relationship between number of triggers detected in the coffee extract and TDI score. In both figures, non-parosmic participants = blue, pre-COVID-19 parosmic participants = orange, post-COVID-19 parosmic participants = green. Credit: *Communications Medicine* (2022). DOI: 10.1038/s43856-022-00112-9

For people with parosmia, or distorted sense of smell, the aroma of freshly ground coffee can be as disgusting as burning rubbish.

Now, researchers have discovered the secrets of why certain [food](#) and drinks smell (and likely taste) disgusting to people with parosmia.

In new research published in *Communications Medicine*, a team of scientists have found that certain highly potent odor molecules found in

[coffee](#) trigger the sense of disgust which is associated with parosmia. Take 2-furanmethanethiol—the most potent [aroma](#) molecule that you've never heard of before. It is one of those molecules that has been driving people to their wit's end.

By trapping the aroma of coffee, the team were able to test coffee compounds on volunteers who had parosmia and compare their reaction with those who didn't. From the hundred or so aroma compounds present in coffee, people with parosmia could point to those responsible for the sense of disgust. Among the 29 volunteers, scientists found 15 commonly identified compounds that triggered parosmia.

Dr. Jane Parker, Associate Professor of Flavor Chemistry and Director of the Flavor Center at the University of Reading said:

"This is solid evidence that it's not all 'in the head,' and that the sense of disgust can be related to the compounds in the distorted foods. The [central nervous system](#) is certainly involved as well in interpreting the signals that it receives from the nose. The parosmic experience is a combination of the two mechanisms which produces the distorted perception of everyday foods, and the associated sense of disgust.

"We can now see that certain aroma compounds found in foods are having this particular effect. It will, we hope, be reassuring for those with parosmia to know that their experience is 'real,' that we can identify other foods which may also be triggers and, moreover, suggest 'safe' foods that are less likely to cause a problem. This research provides useful tools and strategies for preventing or reducing the effect of the triggers."

Mr. Simon Gane, one of the researchers, from the Royal National Ear, Nose and Throat and Eastman Dental Hospital said: "We still have a long way to go in understanding this condition, but this research is the first to

zoom in on the mechanism in the nose. We now know this has to be something to do with the nerves and their receptors because that's how these molecules are detected."

Some of the most cited food and drinks that set off parosmia in sufferers include:

- Coffee
- Onions
- Garlic
- Chicken
- Green peppers

The study used a technique called GC-Olfactometry. The aroma from the coffee is introduced into one end of a very long and narrow pipe called a capillary. Some of the [aroma compounds](#) travel through the capillary faster than others. The fastest ones come out of the other end first and the slower ones come out later, thereby separating the compounds out so that the volunteers could smell them and describe them one by one.

Prior to the global pandemic caused by COVID-19, parosmia was a rare condition known to occur after infections such as cold, flu or sinus infections, with very little awareness about the causes and treatments for the disease.

During the pandemic COVID-19 symptoms included [loss of smell](#) and taste in 50–60% of cases, of which about 10% developed parosmia. Since the omicron variant, loss of smell and taste has become a less common symptom (estimated to occur in about 10–20% of cases) and parosmia cases are likely to be fewer in number, parosmia is still estimated to affect 2 million people in Europe.

More information: Jane K. Parker et al, Insights into the molecular triggers of parosmia based on gas chromatography olfactometry, *Communications Medicine* (2022). [DOI: 10.1038/s43856-022-00112-9](https://doi.org/10.1038/s43856-022-00112-9)

Provided by University of Reading

Citation: Researchers find cause of disordered smell (2022, May 27) retrieved 29 April 2024 from <https://medicalxpress.com/news/2022-05-disordered.html>

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