

Sodium citrate spray could temporarily restore sense of smell

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Credit: University of East Anglia

A substance commonly used to treat bladder issues could temporarily treat people who have lost their sense of smell, according to research published in the journal *Clinical Otolaryngology*.

A study by the University of East Anglia (UEA) with the Smell & Taste clinic at the James Paget University Hospital showed sodium citrate nasal spray could offer temporary improvement in the ability to [smell](#) for patients suffering from anosmia or hyposmia – the loss of smell – in cases caused by a virus or other non-obstructive causes.

Sodium citrate, the [sodium salt](#) of citric acid, is safe to use and already licensed for medicinal uses in the stomach and bladder.

Sodium citrate is known to bind calcium. Calcium molecules are key in cell function, and are believed to be involved in 'turning down' the [sense](#) of smell. Researchers wanted to investigate if reducing calcium in the mucus in the nose would suppress its ability to inhibit a person's sense of smell.

Carl Philpott from UEA said: "The sodium citrate nasal spray was designed to 'mop up' calcium molecules in [nasal mucus](#) and as a result, temporarily turn up the sense of smell.

"In the randomised trial, patients were treated either with sodium citrate spray or sterile water. They were then invited to take part in a series of tests, smelling increasingly stronger concentrations of four different odours – roses, pear, vinegar and menthol, noting at what concentration they could detect the smell.

"Results showed an improvement in those treated with the spray, which lasted for up to two hours. It seemed to be most effective in people whose ability to smell was damaged by viral infection, called post viral olfactory loss or PVOL."

The loss of smell can have a significant impact on sufferers. It can often lead to reduced intake of nutritional food and weight loss as well as affecting personal relationships, social enjoyment and having a negative impact on psychological wellbeing.

Of the patients randomised to be treated with sodium citrate spray, one third showed an improvement with the peak effect seen between 15 and 30 minutes after treatment. Minor side effects noted by patients included a sore throat, slightly runny nose and itching.

Philpott said: "This study offers proof of concept that [sodium](#) citrate [spray](#) may enhance a damaged sense of smell in patients with partial loss

of smell not caused by obstructions.

"Further study in the form of larger clinical trials with patients applying the treatment regularly would help inform whether this treatment should be offered routinely by doctors. It could quite easily and safely be formulated into a treatment to provide temporary relief from [smell loss](#), enhancing the quality of life of [patients](#) with very few side effects."

More information: Carl Philpott et al. A Randomised Controlled Trial of Sodium Citrate Spray for Non-Conductive Olfactory Disorders, *Clinical Otolaryngology* (2017). [DOI: 10.1111/coa.12878](https://doi.org/10.1111/coa.12878)

Provided by University of East Anglia

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