

Korean Scientists Use Dogs' Sensitive Sniffer To Detect Rotting Food

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<http://www.asianscientist.com/in-the-lab/seoul-national-university-dog-olfactory-system-biomimetic-detector-of-rotting-food-2012/>

AsianScientist (Mar. 26, 2012) - Dogs have a highly sensitive olfactory system, and their superior smell sensitivity has made our canine friends an integral part of search and rescue operations and security patrol teams.

But can their superior olfactory sensitivity be used in our daily life to test if the foods we are about to consume have gone bad? Scientists from South Korea seem to think so.

In a paper published in the journal *Analyst*, a team led by Professor Seunghun Hong from Seoul National University has developed a biomimetic detector based on receptors in the canine olfactory system to detect a chemical that indicates whether food is spoiled.

When foods are going bad, oxidized chemicals such as hexanal are produced and released. Conventional methods for food safety evaluation requires complicated sample processing in large facilities, and expensive and slow process to determine food quality.

Using nanovesicles and carbon nanotubes on a chip, the team detected hexanal production in real time, suggesting the potential to give fast, on-site assessment of food quality.

Their system is based on measuring the change in conductance caused by calcium influx when the molecules bind to the receptor, similar to cellular signaling *in vivo*. The sensor detected hexanal in spoilt milk samples down to one femtomolar (1 fM) concentrations.

Moreover, the team also showed that the sensor can discriminate against binding to other similar molecules at the single carbon atomic resolution, indicating high specificity to hexanal.

Although other olfactory cell-based sensors have been designed before, this is the first time an actual biological signaling pathway has been mimicked. The rotting milk also did not require prior preprocessing before detection.

The article can be found at: [Park J et al. \(2012\) Bioelectronic sensor based on canine olfactory nanovesicle-carbon nanotube hybrid structures for the fast assessment of food quality.](#)

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