Peppermint spray for vigilant driving

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Drivers of conditionally automated vehicles become fatigued more quickly than drivers of completely manual vehicles, according to researchers writing in the International Journal of Vehicle Performance.

They are investigating ways to counteract this effect and so reduce the risk of fatigued drivers being involved in a road traffic accident. One promising approach is to use olfactory stimulation, specifically exposing the driver to the odor of peppermint periodically.

Qiuyang Tang, Gang Guo, and Mengjin Zeng of Chongqing University in Chongqing, China, have looked at how olfactory stimulation with peppermint odor affects fatigue and more critically vigilance in drivers. They looked at subjective and objective variables with a group of 34 volunteers some of whom were tested with peppermint exposure and others with simply air. They found that those drivers given a puff of peppermint odor reported a lower feeling of fatigue compared to the drivers given a puff of unscented air. Indicators of reaction time and ocular variables also supported that the drivers' vigilance increased during the peppermint stimulation but not with air exposure.

Given the advent of self-driving and conditionally automated vehicles, it is critical that the "driver" be relieved of the main duties of operating the steering wheel, the accelerator, and brakes, under normal conditions but be present in a supervisory capacity and ready to take back control from the vehicle's computer when the automated driving system meets its system limitations or when conditions change and so to avoid a collision or other accident.

The team points out that peppermint can be a little too pungent for some drivers and so an additional less noxious smell might be mixed with the olfactory stimulant, the team's testing roadmap includes such a modification. They also point out that stimulation with the odor of peppermint has little effect on drivers if they are not fatigued. The researchers have also focused on how one might determine whether a driving supervisor in a conditionally automated vehicle is tiring or falling asleep. As such, one day the vehicle's sensors may well be programmed to detect driver fatigue and release an appropriate stimulant at an

opportune time to ensure that safety is prioritized.

More information: Qiuyang Tang et al, The effect of peppermint odour on fatigue and vigilance in conditional automated vehicle, *International Journal of Vehicle Performance* (2021). DOI: 10.1504/IJVP.2021.116060

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