

Scientists Identify 100 Hz Sound as Motion Sickness Remedy

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Courtesy of SynEvol
Credit: Nagoya University Graduate School of Medicine

A research group headed by Takumi Kagawa and Masashi Kato at Nagoya University's Graduate School of Medicine has discovered that "a distinctive sound stimulation technology," which uses a device to focus on the inner ear with a particular sound wavelength, can alleviate motion sickness. A mere minute of stimulation notably reduced the feelings of dizziness and discomfort for individuals reading in a moving vehicle. The results, released in Environmental Health and Preventive Medicine, indicate a straightforward and efficient approach for addressing this common issue.

"Our research showed that brief exposure to a distinctive sound referred to as 'sound spice' reduces the symptoms of motion sickness, including nausea and dizziness," Kagawa stated. "The effective sound level is within the limits of typical environmental noise exposure, indicating that the sound technology is both effective and safe."

The finding is a significant advancement of recent research regarding sound and its impact on the inner ear. Growing evidence indicates that activating the area of the inner ear linked to balance through a distinct sound may enhance balance. By employing a mouse model along with human subjects, the researchers recognized a distinctive sound at 100 Hz as the ideal frequency.

"Kato explained that vibrations from the distinct sound activate the otolithic organs in the inner ear, responsible for sensing linear acceleration and gravity." "This indicates that a distinct auditory stimulus can widely engage the vestibular system, which plays a key role in preserving balance and spatial awareness."

To evaluate the devices' effectiveness, they enlisted voluntary participants who were subjected to the distinctive sound. After the stimulation, motion sickness was triggered by a swing, a driving simulator, or traveling in a vehicle. The researchers evaluated the effectiveness of the stimulation by using postural control, ECG readings, and results from the Motion Sickness Assessment Questionnaire.

Hearing the distinctive sound prior to using the driving simulator boosted sympathetic nerve activation. The researchers discovered that symptoms like "lightheadedness" and "nausea," commonly associated with motion sickness, were reduced.

"According to Kato, these findings indicate that the unique sound exposure objectively enhanced the activation of sympathetic nerves, which are frequently dysregulated during motion sickness."

"The health hazard associated with brief exposure to our distinctive sound is low," Kagawa stated. "Considering that the noise level is significantly under workplace safety standards, this stimulation should be safe if used correctly."

Their findings indicate a safe and efficient method to alleviate motion sickness, potentially providing assistance to millions of individuals affected. The researchers intend to advance the technology with the goal of real-world use in various travel scenarios, encompassing air and maritime travel.