

In reference to capsaicin receptors are colocalized with sweet/bitter receptors in the taste sensing cells of circumvallate papillae

Tino Just · Thomas Hummel

Published online: 14 May 2010
© Springer-Verlag 2010

Dear Editors,

We read with interest the paper “Capsaicin receptors are colocalized with sweet/bitter receptors in the taste sensing cells of circumvallate papillae” published by Moon et al. [1]. The authors report a double reaction of T1R2-, T1R3- or T2R6 positive vallate cells with anti-VR1 antibodies of rat circumvallate papillae. They also found that about 60% of VR1 positive cells in the circumvallatae papillae reactive with α -gustducin. The authors concluded that capsaicin may interact with transducin pathways of sweet and bitter sensations.

Many researchers described the suppressive effects of capsaicin on responses to taste stimuli of sweet, bitter, and umami in humans [2–4]. At lower concentrations, capsaicin can also elicit bitter [4, 5], and sweet sensations [5]. Green and Schullery described bitter sensations when capsaicin was applied to fungiform, foliate, and circumvallate papillae of the human tongue [4].

In our study, capsaicin was applied to the dorsal anterior tongue in healthy subjects. Beside bitter, sour and salty sensations, capsaicin elicited also sweet sensations [5].

The presented study reported evidence of VR1 receptors in taste cells in circumvallate papillae in rats. Based on the author’s findings, one might speculate that VR1 receptors can also be found in taste cells of the fungiform papillae of the dorsal anterior tongue even in humans. This may

explain why some healthy subjects report sweet sensations after stimulation with capsaicin at low concentrations. Knowledge of the VR1 receptors of taste cells of fungiform papillae may also help to explain symptoms after chorda tympani nerve (CTN) transection. In patients with transected CTN the capsaicin thresholds were lower at the ipsilateral tongue side compared to the contralateral side [6].

We would like to congratulate the authors for their excellent study because they clearly emphasize the need for further research in taste-trigeminal interactions.

References

1. Moon YW, Lee JH, Yoo SB, Janhg JW (2010) Capsaicin receptors are colocalized with sweet/bitter receptors in the taste sensing cells of circumvallatae papillae. *Genes Nutri* (in press)
2. Simons CT, O’Mahony M, Carstens E (2002) Taste suppression following lingual capsaicin pre-treatment in humans. *Chem Senses* 27:353–365
3. Green BG, Hayes JE (2003) Capsaicin as a probe of the relationship between bitter taste and chemesthesis. *Physiol Behav* 79:811–821
4. Green BG, Schullery MT (2003) Stimulation of bitterness by capsaicin and menthol: differences between lingual areas innervated by the glossopharyngeal and chorda tympani nerves. *Chem Senses* 28:45–55
5. Just T, Pau HW, Steiner S, Hummel T (2007) Assessment of oral trigeminal sensitivity in humans. *Eur Arch Otorhinolaryngol* 264:545–551
6. Just T, Steiner S, Strenger T, Pau HW (2007) Changes of oral trigeminal sensitivity in patients after middle ear surgery. *Laryngoscope* 117:1636–1640

T. Just (✉)
Department of Otorhinolaryngology, Head and Neck Surgery,
Doberaner Str. 137-139, 18057 Rostock, Germany
e-mail: tino.just@med.uni-rostock.de

T. Hummel
Smell and Taste Clinic, Department of Otorhinolaryngology,
University of Dresden Medical School, Dresden, Germany