

〈シンポジウム II〉

『感覚から香粧品の価値を考える』

刺激感受性：温度感受性 TRP チャネルの生理機能

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Sensitivity to Stimuli: Physiological Function of Thermosensitive TRP Channels

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Abstract

Sensing temperature is essential for organismal survival and efficient metabolism, and now we know that TRP (transient receptor potential) channels are important for detecting ambient temperatures in many species. TRP channels were first described in *Drosophila* in 1989, and in mammals, TRP channels comprise six related protein families (TRPC, TRPV, TRPM, TRPA, TRPML, TRPP). One subunit of the TRP channel is composed of six transmembrane domains and a putative pore region with both amino and carboxyl termini on the cytosolic side. TRP channels are best recognized for their contributions to sensory transduction, responding to temperature, nociceptive stimuli, touch, osmolarity, pheromones and other stimuli from both within and outside the cell. Among the huge TRP super family of ion channels, some have been proven to be involved in thermosensation detecting ambient temperatures from cold to hot. There are now nine thermosensitive TRP channels (TRPV1, TRPV2, TRPV3, TRPV4, TRPM2, TRPM4, TRPM5, TRPM8 and TRPA1) with distinct temperature thresholds for their activation. Thermosensitive TRP channels work as 'multimodal receptors' which respond to various chemical and physical stimuli. TRPV1, the first identified thermosensitive TRP channel, was found as a receptor for capsaicin in 1997, and later was found to have thermosensitivity. I would like to describe the physiological significance of the thermosensitive TRP channels.

Key words: sensing temperature, nociceptive stimuli, transient receptor potential channels.