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The Expression and Function of TRPV1 and TRPV3 in the Hippocampus

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Poster Presentation P26

**THE EXPRESSION AND FUNCTION OF TRPV1 AND TRPV3
IN THE HIPPOCAMPUS**

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Sensory neurons in the peripheral nervous system are responsible for sending sensory information from the periphery to the central nervous system. The Transient Receptor Potential Vanilloid (TRPV) family of genes encodes for different types of channels in the peripheral nervous system that respond to temperature, mechanical and chemical stimuli. Particularly, TRPV1 is expressed in sensory neurons and TRPV3 is expressed in keratinocytes (skin cells). But it is becoming apparent that the role of TRPV channels is much broader than just sensory transduction because they are proposed to be expressed in certain regions of the brain. The purpose of this study was to determine the expression and function of TRPV1 and TRPV3 in the hippocampus of the brain. In this study, using patch clamp electrophysiological techniques, I recorded membrane currents and membrane depolarizations leading to the generation of action potentials from cultured hippocampal neurons in response to application of 2-APB, a TRPV3 channel activator. I also used the calcium fluorescence imaging technique and found that application of 2-APB induced an increase in intracellular Ca^{2+} levels. However, application of capsaicin, a TRPV1 activator, neither induced a current nor increased intracellular Ca^{2+} levels in the same experimental conditions. From these results, I conclude that TRPV3 channels are present in the hippocampus, but not TRPV1 channels.