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Activation of the transient receptor potential vanilloid 3 ion channel in Mouse 308 keratinocytes

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Transient Receptor Potential (TRP) channels are a superfamily of ion channels, some of which can be activated upon chemical and/or mechanical stimuli suggesting an involvement in the pain pathway. Some TRPs are also heat-sensitive, of which the Transient Receptor Potential Vanilloid 3 (TRPV3) channel is one. TRPV3 can also be activated and sensitised by structurally different chemical compounds, such as diphenylboronic anhydride (DPBA), carvacrol, linoleic acid (LA) and arachidonic acid (AA); and a selective antagonist would be a novel approach in pain treatment. Based on findings that TRPV3 is expressed in mouse 308 keratinocytes (M308K; Chung et al., 2003), a native assay was developed using these cells to study agonist pharmacology. A variety of agonists/potentiators were profiled in the assay by assessing the intracellular Ca2+-responses in the cells utilising the fluorescent calcium indicator Fluo-3 and a Fluorometric Imaging Plate Reader (FLIPR). Our results show that TRPV3 agonist-induced responses can be potentiated by LA or AA. In addition, TRPV3 can be activated by the synergy of certain combinations of agonists (DPBA+carvacrol). These responses were inhibited with a selective TRPV3 antagonist (Hydra Biosciences – WO 2008/033564 A1). It is concluded that M308K may be appropriate as an assay to study native TRPV3 pharmacology *in vitro*.