

## SUMMARY

### ***SIGNIFICANCE OF TRANSIENT RECEPTOR POTENTIAL VANILLOID-1 (TRPV1) IN THE STOMATOLOGICAL PRACTICE***

Dr. Marincsák Rita

UD MHSC, Doctoral School of Molecular Medicine  
(Physiology and Neurobiology Programme)  
Tutor: Dr. Bíró Tamás

In our current study we examined the role of the transient receptor potential vanilloid-1 (TRPV1) ion channel in the stomatological practice. In the first part of our experiments we wished to determine the effect of tramadol (a drug widely used in the clinical practice) on TRPV1. In our heterologous expression system, which is composed of TRPV1 expressing CHO cells, we observed that tramadol – similarly to capsaicin – dose-dependently increased the  $[Ca^{2+}]_i$ , while on the cells that did not express TRPV1 (cells transfected with an empty vector) we detected no change in  $[Ca^{2+}]_i$ . We also found that tramadol, in contrast with capsaicin, caused significant tachyphylaxis. It also became clear that the TRPV1 antagonist capsazepine markedly but reversibly blocked the changes in  $[Ca^{2+}]_i$  caused by tramadol. These data suggest that the analgesic drug tramadol is capable of specifically activating TRPV1.

In the second half of our experiments we examined the expression of TRPV1 on tongue epithelial cells originating from healthy, leukoplakic and tumorous samples. We found that TRPV1 is expressed in healthy human tongue epithelial cells. We also found that TRPV1 expression is significantly increased in both the precancerous lesions and in different grade squamous cell carcinomas. It also became clear that the degree of increased TRPV1 expression shows no correlation with the tumor grade. We further showed that the TRPV1 expression of human tongue squamous cell carcinoma derived CAL27 cells increases in parallel with their confluence. Based on these data it can be hypothesized that TRPV1 plays an important part in the regulation of proliferation and survival of the cells. Our data also suggest that TRPV1 can be a new, promising target molecule in both the early diagnosis and supportive treatment of tongue squamous cell carcinomas.

Keywords: Transient Receptor Potential Vanilloid-1 (TRPV1), Tramadol, tongue squamous cell carcinoma

Kulcsszavak: Tranziens Receptor Potenciál Vanilloid-1 (TRPV1), Tramadol, nyelv laphámkarcinóma