Qualitative measurement of pain by analysing the salivary alpha amylase

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ABSTRACT

The purpose of the study was to develop a qualitative measurement for pain by measuring salivary alpha amylase (sAA). In this study, sAA levels were measured in order to investigate the relativity between fluctuation of sAA and pain on Institute of Cancer Research (ICR) mice by injection needle as a physical stimulus. Mice were chosen as an object of experiment since mice and human have similarities in both physical behaviour and biological behaviour. Here, ICR mice were divided into two groups; injected by Nanopass 33 (TERUMO Corporation, $100\,\mu m$ and $200\,\mu m$ in inner and outer diameter) and a control (without any injection). Whole saliva was collected from the oral cavity by micropipette for both groups. As a result, there was a significant difference in sAA levels between the two groups as the p value (probability value) was below than 0.01 ($p < 0.01$). Therefore, this is the first study showing the non-invasive method of qualitative pain measurement for minor damage caused by physical stimulus. The results demonstrate the potential of sAA as an indirect marker for pain and suggest that the present experimental situation is a suitable experimental model for measuring pain.

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