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LCMS AS A METHOD FOR EXAMINATION DIFFERENCES IN BRAIN MICRODIALYSATES OF LE/HE RATS

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Investigating chemical composition of extracellular space may give essential information about brain functions. Combination of microdialysis and liquid chromatography-mass spectrometry (LCMS) method gives an opportunity to examine low concentrated analytes in biological fluids (for example cerebrospinal fluid) with good sensibility and better selectivity [1]. Biogenic amines, amino acids and neuropeptides have being found in microdialysates from rat brain with LCMS method. Neuropeptides play important roles in neurotransmission or related process, influencing the activity of the brain in specific ways and are thus involved in particular brain functions, like analgesia, reward, food intake, learning and memory [2].

We have found that there are differences in some substances on extracellular levels in microdialysates in our low (LE) and high (HE) exploratory activity rats [3] therefore we found interesting to examine is there any different substances or basal levels of substances or in brain cerebrospinal fluid in our LE/HE model.

In our primary study we found differences between LE and HE rats in some compounds of cerebrospinal fluid microdialysate [*data unpublished*]. To eliminate matrix effects (Ringer solution) we used ZipTip method [4], which gave salt free samples and thereby assured more accurate analysis. There is need for futher structural examination to be sure which compunds they are. This kind of research with LE/HE model rats have never been done before and therefore we see great perspective for this method not only for to determine diffrences between LE and HE rats but in addition to find novel neurotransmitters in brain fluid which may explain differences in behavioural models.

References

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