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PhD in Pharmaceutical Sciences
2014-2015

INVITATION to the Public defence of

Katrien MAES

To obtain the academic degree of '**DOCTOR IN PHARMACEUTICAL SCIENCES**'

Nano UHPLC-ESI-MS/MS optimizations for the in vivo monitoring of possible anticonvulsant neuromedin-like peptides in microdialysates**Monday 4 May 2015**

Auditorium **P. Brouwer**, 17:00

Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

How to reach the campus Jette:

<http://www.vub.ac.be/english/infoabout/campuses>



Vrije Universiteit Brussel

Summary of the dissertation

Neuropeptides are an important class of signaling molecules present in the nervous system. Renowned researchers selected neuropeptides as one of the research priorities for future drug development for neurological diseases, including epilepsy, because of their potent, modulatory effect on the extracellular environment and their preferential release in pathological conditions.

To obtain better insights in the peptidergic effects involved in epilepsy, it is essential to monitor the concentration dynamics of neuropeptides in the brain. Therefore, the major part of the work was devoted to the development of a selective & sensitive nano ultra-high performance liquid chromatography-electrospray ionization-tandem mass spectrometric (nano UHPLC-ESI-MS/MS) method for the quantification of three neuromedin-like peptides in microdialysates, i.e. neurotensin, neuromedin B and neuromedin N.

Developing bioanalytical methods for peptides is challenging because of their low extracellular concentrations, their low microdialysis efficiencies and their tendency to stick to several surfaces (aspecific adsorption). To achieve the ultimate level of method sensitivity, we focused on the reduction of aspecific adsorption of peptides as well as on the thorough optimization of all the parameters influencing the analysis. The validated assay was subsequently applied for the simultaneous quantification of the three peptides in *in vivo* microdialysis samples, collected in physiological conditions as well as in response to acute seizures. Additionally, some preliminary pharmacological experiments were performed to identify innovative neuropeptide systems involved in epilepsy.

Curriculum Vitae

Katrien Maes was born on the 16th of May 1987 in Vilvoorde, Belgium. In 2005, she started the study of Pharmaceutical Sciences at the Vrije Universiteit Brussel. Five years later, she defended her master thesis, entitled 'Nano LC-MS/MS for the quantification of hippocampal neuropeptides possibly involved in limbic epilepsy' and obtained the degree of Master in Drug Development with highest distinction. Her interest in analytical chemistry and pharmacology was awarded with a research grant from the Agency for Innovation by Science and Technology in Flanders (IWT). In January 2011, Katrien continued the work she initiated during her master thesis as a PhD student at the Center for Neurosciences under the supervision of Prof. Ilse Smolders, Prof. Ann Van Eeckhaut and Prof. Yvette Michotte. She further broadened her analytical knowledge and practical skills during a stay abroad at the University of Michigan in the lab of Prof. Robert Kennedy.

The results of the research work were presented as oral and poster communications at several national and international conferences. Additionally, Katrien published three papers as first author in international peer-reviewed journals. She also contributed to other papers as co-author.

On the 12th of January 2015, Katrien started working at Pfizer Puurs as Quality Assurance Release Engineer for sterile medicines.