

**Examencommissie/Board of examiners****Prof. M. Frederich**

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Department of Toxicology, Dermato-Cosmetology and Pharmacognosy  
Center for Pharmaceutical Research (CePhar)  
Vrije Universiteit Brussel

**Prof. F. Questier**

Department of Biostatistics and Medical Informatics (BISI)  
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**Prof. Y. Vander Heyden & Em. Prof. J. Smeyers-Verbeke, promotors****Dr. B. Dejaegher, co-promotor**

Department of Analytical Chemistry and Pharmaceutical Technology (FABI)  
Center for Pharmaceutical Research (CePhar)  
Vrije Universiteit Brussel

Doctoraat Farmaceutische Wetenschappen  
*PhD in Pharmaceutical Sciences*  
2011-2012

Openbare verdediging van/*Public defence of*

**Goedele ALAERTS**

Voor het behalen van de academische graad van  
**'DOCTOR IN DE FARMACEUTISCHE WETENSCHAPPEN'**  
*To obtain the academic degree of*  
**'DOCTOR IN PHARMACEUTICAL SCIENCES'**

**Chromatographic fingerprints of herbal extracts as  
tools for identification or quality control**

Promotor: Prof. Y. Vander Heyden & Em. Prof. J. Smeyers-Verbeke  
Co-promotor: Dr. B. Dejaegher

**Wednesday 12 September 2012**

Auditorium Brouwer (building A), 17:00  
Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

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## Situering van het proefschrift/*Summary of the dissertation*

For centuries herbs are used to relieve symptoms or to treat diseases. In 2000 the World Health Organization (WHO) still indicated the lack of adequate or accepted research methodology for evaluating traditional medicines. Since then, much effort is put in the quality control of herbal products. Besides macro- and microscopic investigation, markers are often used for this purpose. However, this does not always allow evaluating the intrinsic quality of the herb. Therefore, as an alternative the use of fingerprints of a herbal sample is investigated. A fingerprint is a characteristic profile or pattern, which can be obtained, for instance, by spectroscopic but also by chromatographic techniques.

The aim of the Ph.D. study was to develop chromatographic fingerprints of herbal products and to investigate their applicability as a tool in identification and quality control. In different case studies, factors were examined to increase both the number of compounds separated in the fingerprints and the fingerprint differentiation between different groups, e.g. different herbal species. The case studies led to the definition of a High-Performance Liquid Chromatographic fingerprint development strategy. Validated methods were used to obtain fingerprints of herbal samples. To explore and evaluate them, exploratory data analysis techniques were used. Further, similarity analysis techniques were compared and evaluated as a tool to investigate whether or not samples are genuine.

## Curriculum Vitae

Goedele Alaerts was born on 23 July 1980 in Brussel, Belgium. In 1999 she started her studies of Pharmaceutical Sciences at the Vrije Universiteit Brussel. On 4 July 2004, she graduated with high distinction as Pharmacist. For her master thesis, which was carried out at the department of Toxicology, Dermato-cosmetology and Pharmacognosy under the supervision of Prof. V. Rogiers and Prof. K. De Paepe, she investigated how to measure the desquamation degree of the skin.

In October 2004, she started as Ph.D. student at the department of Analytical Chemistry and Pharmaceutical Technology under the supervision of her promoters Prof. Y. Vander Heyden, Em. Prof. J. Smeyers-Verbeke and co-promotor Prof. B. Dejaegher. During this period, she was also teaching assistant in practical courses of Analytical Chemistry for bachelor and master students and was co-promotor of master theses in Pharmaceutical Sciences.

She is first author of four publications (a fifth one is in preparation) and is co-author of four others, all of them published in international peer-reviewed journals. She participated in several national and international scientific conferences, where she presented her research in poster and oral presentations.