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Vrije Universiteit Brussel
Faculteit Geneeskunde & Farmacie

Doctoraat Farmaceutische Wetenschappen
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UITNODIGING

voor de openbare verdediging van het
doctoraatsproefschrift van

Magnus Ajong Atemnkeng

20 Juni 2007



Situering van het proefschrift

Malaria is the world's highest killer disease with at least 300 million yearly clinical cases occurring mainly in Africa. The classical antimalarial drugs such as chloroquine (CQ), quinine (Q) and sulfadoxine-pyrimethamine (SP) although less effective due to resistance are still widely used. Novel compounds such as the artemisinin-derived (AR) drugs are more potent and no resistance to them is yet to be reported. In Africa, the malaria burden is exacerbated by the presence of poor quality medicines and few studies have been performed on this topic. In addition, there are insufficient analytical methods for health officials to check the quality of these drugs.

The first aim was to develop simple and less expensive methods which are suitable for developing countries. UV spectrophotometry was used to verify the content of CQ, Q and proguanil in tablets and syrups. An HPLC-UV assay was developed for artemether and the preservatives, methyl paraben (MP) and propylparaben (PP) in a dry suspension. TLC was used to identify the preservatives in the CQ and Q syrups, and to determine artemisinin in plant extracts. The second aim was to assess the proportion of low quality anti-malarials in two endemic countries: Kenya and DR Congo. The study found that 29% (4/14) of CQ and Q tablets failed to meet the 95-105% content requirements of the European Pharmacopoeia (Ph. Eur.). All batches of SP were underdosed while 9 of the 24 AR drugs did not conform. We compared the efficacy of an infusion made from *Artemisia annua* plant leaves in curing infected mice to the WHO required regimen for artemisinin. All mice treated with the tea died while WHO treated mice survived.

The presence of substandard and counterfeit antimalarials on the market is detrimental to public health. Hence, rapid field methods are necessary to determine drug quality.

U wordt vriendelijk uitgenodigd op de openbare verdediging van het proefschrift van

Magnus Ajong Atemnkeng

'Analytical method development for post-marketing evaluation of classical antimalarials and novel artemisinin-derivative medicines'

Op 20 Juni 2007 om **18h**
in auditorium R. Vanden Driessche
Faculteit Geneeskunde & Farmacie,
Laarbeeklaan 103, 1090 Brussel

Curriculum Vitae

Magnus A. Atemnkeng obtained his Bachelor of Science in Biochemistry from the University of Buea, Cameroon in 1996. He then worked as a teacher of Biology and Chemistry to pre-University students. Later, he obtained admission into the Master of Medical and Pharmaceutical Research (VUB) program in October 2001 graduating in June 2003 with distinction. His thesis project was performed in the Pharmaceutical Institute under the guidance of Prof. J. Plaizier-Vercammen.

Under the same promotor, he registered into the PhD in Pharmaceutical Sciences program in October 2003. His project was focused on the development of analytical methods for antimalarial medicines. In sub-Saharan Africa, the disease burden of malaria is high and this is mainly due to the presence of poor quality medicines and the lack of suitable method of analyses to rapidly check their quality. He has developed simple and less expensive methods like UV spectrophotometry, thin layer chromatography and high performance liquid chromatography. The methods developed have been successfully used to test the content of active ingredients and preservatives in a range of antimalarial formulations on the market.

Magnus' work was sponsored by Arenco Pharmaceutica N.V, a Belgian company that develops and markets innovative products; all of them targeted at malaria and based on artemisinin-derivatives. He has also done external work for Medicines for Malaria Venture; a Swiss charitable organisation created to discover, develop and deliver new antimalarial drugs. He is the first author of six scientific publications, four of which are dedicated to his PhD project.