Visceral leishmaniasis – malaria co-infections
Epidemiological, immunological and parasitological aspects
van den Bogaart, E.

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Concomitant infections by multiple pathogen species represent a serious threat to human health. Affecting over a billion people worldwide, co-infections are an important cause of human morbidity and mortality, and a powerful driver of pathogen evolution. Their clinical and pathological spectrum reflects the ability of co-infecting pathogens to interact with each other, resulting in synergistic or antagonistic effects that may alter the course and clinical presentation of disease, posing significant diagnostic and therapeutic challenges.

Visceral leishmaniasis and malaria are two vector-borne diseases that co-exist in many areas around the world. Caused by parasites of the genus *Leishmania* and *Plasmodium*, respectively, visceral leishmaniasis and malaria share part of their environmental, clinical and pathogenetic features. This suggests that the two diseases could co-occur and cross-interact in the same host, although limited data are available on this subject. This thesis presents an overview of clinical and experimental studies focusing on the epidemiology, immunology and parasitology of visceral leishmaniasis – malaria co-infections. By combining clinical and field evidence gathered from across East Africa with in vitro data on the mutual effects of the two parasites on and through the immune system, this thesis provides evidence that visceral leishmaniasis and malaria frequently co-exist in patients living in co-endemic areas, and can interact at immunological and non-immunological level, with potential implications on the course and resolution of the two diseases.
VISCERAL LEISHMANIASIS – MALARIA CO-INFECTIONS

Epidemiological, immunological and parasitological aspects

Erika van den Bogaart
**Colofon**

**VISCERAL LEISHMANIASIS – MALARIA CO-INFECTIONS**  
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This thesis was prepared at KIT Biomedical Research  
(Koninklijk Instituut voor de Tropen/Royal Tropical Institute).

Part of the research of this thesis was financially supported by TI Pharma.

Cover illustration by Petrus van den Bogaart

Layout and design by Legatron Electronic Publishing, Rotterdam  
Printed by Ipskamp Printing, Enschede
VISCERAL LEISHMANIASIS – MALARIA CO-INFECTIONS

Epidemiological, immunological and parasitological aspects

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor
aan de Universiteit van Amsterdam
op gezag van de Rector Magnificus
prof. dr. ir. K.I.J. Maex

ten overstaan van een door het College voor Promoties ingestelde commissie,
in het openbaar te verdedigen in de Agnietenkapel
op vrijdag 20 januari 2017, te 10.00 uur

door

Erika van den Bogaart

geboren te Bergamo, Italie
Promotiecommissie:

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Faculteit der Geneeskunde
What you get by achieving your goals is not as important as what you become by achieving your goals.

Zig Ziglar

to my family
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