

**Mycological Infection among Diabetic Foot Ulcer- Patients attending
Diabetic Clinic, Kenyatta National Hospital, Kenya**

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Declaration

This thesis is my original work and has not been presented for a degree in any other university or for any other award.

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DEDICATION

To my mother the late Teresiah Muthoni Mutu, for you I will undertake all that is desirable

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ABBREVIATIONS AND ACRONYMS

1DM	Type 1 Diabetes Mellitus
2DM	Type 2 Diabetes Mellitus
AIDS	Acquired Immunodeficiency Syndrome
API	Analytical Profile Index
ATCC	American Type Culture Collection
BHIA	Brain Heart Infusion Agar
C	Candida
CaC	CHROMagar Candida
CDC	Center for Disease Control
DCCT	Diabetes Control and Complication Trial
DMSO	Dimethyl sulfoxide
DTM	Dermatophyte Test Medium
G+ve	Gram Positive
GMS	Grocott's methenamine silver
G-ve	Gram Negative
H&E	Haematoxylin and Eosin
HbA1c	Glycosylated Haemoglobin
HIV	Human Immunodeficiency Virus
ITROMID	Institute of Tropical Medicine and Infectious Diseases
JKUAT	Jomo Kenyatta University of Agriculture and Technology
KEMRI	Kenya Medical Research Institute
KG	Kilogram

KNH	Kenyatta National Hospital
KOH	Potassium Hydroxide
LCB	Lactophenol Cotton Blue
NaCl	Sodium Chloride
NADPH	Nicotinamide Adenine Dinucleotide Phosphate-Oxidase
NCCLS	National Control of Clinical Laboratory Standards
P	Probability
PAS	Periodic Acid-Schiff
SD	Standard Deviation
SDA	Sabouraud's Dextrose Agar
SOP's	Standard Operation Procedures
Spp	Species
SPSS	Statistical Package for the Social Sciences
UKPDS	Complication Trial and the United Kingdom Prospective Diabetes Study
UON	University of Nairobi
WHO	World Health Organization
H&E	Haematoxylin and Eosin
PAS	Periodic Acid-Schiff
GMS	Gomori's methenamine silver nitrate

ABSTRACT

The aim of the study was to isolate and identify fungal pathogens associated with dermatophytoses among diabetic patients and identify the spectrum of yeasts colonizing diabetic foot ulcers at Kenya National Hospital. A total of 164 samples from 61 individuals with mean age 59.5 ± 10.1 ranging between 38 and 90 years were obtained. Out of 164 samples analysed, the five most occurring moulds were *Biopolaris hawaiiensis* (5.5%), *Trichophyton schoenleinii* (3.7%), *Aspergillus niger* (3.0%), *Trichophyton rubrum* (3.0%), *Fusarium oxysporum* (3.0%). Occurrence of rest of the moulds was less than 3.0%. *Penicilium marneffeii* (0.6 %) was exceptional due to its dimorphic nature at different temperatures and also its rare occurrence. Among the dermatophytes, the most commonly occurring mould was *Trichophyton schoenleinii* (3.7%) while among the non dermatophytes *Biopolaris hawaiiensis* (5.5%) was the most common. Among the pathogenic yeasts 8 species were identified. The most occurring yeasts were *Candida parapsilosis* (6.1%), *C. famata* (3.0%). Occurrence of the rest of the yeasts was less than 3.0%. patients with callus formation showed the highest occurrence of fungi (78.6%), compared to 65.2% in those with neuropathy, 53.3% in patients with structural deformity /char cot's joint, 41.2% in those with poor circulation, 40.0% in ischemia, 36.1% in poor glycemc control, 33.3% in amputation, and 25.0% in corns and callus patients.

Morbidity is high in people with diabetes microorganisms responsible for the non-healing ulcers inflict devitalized tissue. Mycotic diseases of the feet among patient with diabetes Have hitherto been underestimated interms of diagnostic therapeutic and preventive needs. The study underscores the need for comprehensive mycological evaluation of non-

healing diabetic foot and prudent antifungal treatment based on the laboratory results rather than depending on broad spectrum antibiotics for cure.

The results of this study will be of useful to health care providers in the management of diabetic foot ulcers infected with fungal pathogens. The recommendations of this study if implemented could reduce the length of hospital stay and the financial burden for both the patient and the government.