

**Genetic diversity and bioactive metabolites of yeasts associated with fermented milk in
selected regions of Tanzania**

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This thesis reports on genetic diversity of yeasts associated with both industrially (yoghurt) and traditionally fermented milk (*mtindi*), bioactivity of secondary metabolites of yeast from *mtindi* for potentially valuable yeasts of medicinal value as well as spoilage proteinase production. A total of 25 yeasts isolated from fermented milk sampled from Dar es Salaam, Kilimanjaro, Morogoro and Mwanza, Tanzanian were included in this study. Partial sequencing of the D1/D2 domain of the 26S rDNA (rDNA) was used to establish their diversity. Yeasts belonging to seven genera namely *Galactomyces* (9), *Pichia* (5), *Candida* (4), *Clavispora* (1), *Issatchenkia* (1), *Yarrowia* (3) and *Debaryomyces* (2) were identified. Fourteen extracts were found to be non-toxic against brine shrimps naupalii and were found to have weak to strong antimicrobial activities against *Escherichia coli*, *Vibrio cholera*, *Pseudomonas aureginosa* and *Staphylococcus aureus* while *C. tropicalis*, *P. kudriavzevii*, *C. pararugosa*, *Cl. lusitaniae* and *I. Orientalis*, *P. guilliermondii* were found to possess strong antifungal activity against *Cryptococcus neoformans* and moderate antimycobacterial activity against *Mycobacterium smegmatis*. The highest proteinase activity was exhibited by *C. pararugosa* and *Y. lipolytica*. Using TLC and HPTLC; Alkaloids, Terpenoids and Flavonoids were detected. The findings of this study revealed for the first time the potential of the yeasts from fermented milk from Tanzania as a source of antimicrobials and proteases with potential for research in the pharmaceutical and in dairy industries.