

MOULDS AND OCHRATOXIN A ASSOCIATED WITH GREEN  
COFFEE BEANS (*Coffea arabica* L.) PROCESSED BY DRY AND  
WET METHODS: A CASE STUDY OF NYERI COUNTY

LEAH MASAKIWE MUNYENDO

A Research Thesis Submitted in Partial Fulfillment of the  
Requirements for the award of the Degree of Master  
of Science in Food Science and Technology in the  
Institute of Food and Biosources Technology,  
Dedan Kimathi University of Technology

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## DECLARATION

### Student's declaration caption:

This thesis is my original work and has not been presented in any university/institution for a degree or for consideration of any certification.


Signature .....  ..... Date 03/10/2017 .....

Student's name: Leah Masakhwe Munyendo

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### Supervisor's declaration caption:

This thesis is the candidate's original work and has been written with our supervision and guidance as University Supervisors.


Signature .....  ..... Date 10/12/2017 .....

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## ABSTRACT

Coffee that has been poorly processed and stored can be contaminated with moulds especially *Aspergillus* and *Penicillium* species which have been reported to produce mycotoxins including Ochratoxin A. This study was done to assess the moulds and Ochratoxin A contamination of green coffee beans from Estates and Cooperative societies located in the main coffee growing zone in Nyeri County. The levels of moisture content, sucrose, caffeine and chlorogenic acids content, mould contamination and Ochratoxin A levels in green coffee beans processed by wet and dry methods was determined. The moisture content of the coffee samples were determined by dry oven method, sucrose, caffeine, chlorogenic acids and Ochratoxin A levels by use of HPLC and moulds enumeration by serial dilution technique. The percentage moisture content of coffee samples from Estates and Cooperative societies ranged between 7.06% - 8.47% and 6.85% - 9.27%, respectively. The results showed no significant difference on the level of moisture content in the coffee samples from Estates and Cooperative societies. The sucrose, caffeine and chlorogenic acids content of coffee samples from estates ranged between 6.45% - 8.37%, 1.06% - 1.26% and 4.52% - 6.88% respectively. For coffee samples from Cooperative societies, the sucrose, caffeine and chlorogenic acids content ranged between 5.93% - 8.31%, 1.07% - 1.30% and 4.31% - 7.72%, respectively. Significant ( $p \leq 0.05$ ) variations were observed among the samples from different Cooperative societies and Estates in terms of sucrose, caffeine and chlorogenic acid contents of the coffee beans. Mould counts of coffee samples from cooperative societies and estates were found to be between  $1.46 \times 10^3$  CFU/ml to  $6.0 \times 10^1$  CFU/ml. More dry processed coffee samples were contaminated with moulds as compared to wet processed coffee samples. Ochratoxin A was not detected in all the coffee samples. It can be concluded that coffee samples collected from estates and cooperative societies were not contaminated with Ochratoxin A even though some showed low levels of mould contamination.

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