

Isolation and identification of fungi from virgin coconut oil to develop a process to control fungal contamination

T. T. D. Manilgama¹, R. L. Wimalasekara¹, D. D. Sakalasuriya¹, D. N. Samarasinghe¹,
K. N. Seneviratne¹ and N. Jayathilaka^{1*}

¹Department of Chemistry, Faculty of Science, University of Kelaniya, Sri Lanka

Virgin coconut oil (VCO) is consumed as major source of fat and present in a wide range of health, and cosmetic products. It is a major agricultural product in Sri Lanka catering over 1% of the global demand. However, fungal contamination is a critical issue with production of VCO. This study was conducted to determine the fungal species that contaminate the final oil product and the source/s or the step/s in the production process that result in fungal growth in the final oil product. Samples were collected from four small to medium scale VCO production sites in Sri Lanka. Fungi were isolated at various stages of oil production, including washing water, white meat after washing with water, after drying and final oil products. Isolation of the fungi were done at each step after incubating for 7 days on potato dextrose agar (PDA). Each of the four sites included four different fungi in final oil samples which are morphologically similar to those isolated from white meat wash water and/ white meat. The isolated fungi were then subjected to the Internal Transcribed Spacer region (ITS) sequencing and the isolated species were identified as *Trametes versicolor*, *Fusarium perseae*, *Simplicillium subtropicum* and *Talaromyces malicola* using BLAST search. Boiling at 100 °C and filtration with 0.22 µM showed inhibition of fungal growth for all the species under investigation. Ethanolic crude extract of *Cinnamomum zeylanicum* leaves extracted with Soxhlet apparatus showed inhibition of growth for *F.perseae*, *S.subtropicum*, *T.malicola* while *T.versicolor* displayed less inhibition of growth through disk diffusion method. The study suggests that boiling or filtering the wash water for white meat is effective in controlling fungal growth in VCO. In addition, cinnamon leaf extract shows promise for a safe and effective strategy to control fungal growth in VCO. This valuable information facilitates the implementation of preventive measures.

Keywords: *Cinnamomum zeylanicum*, Fungi, Inhibition, Virgin coconut oil

* njayathi@kln.ac.lk