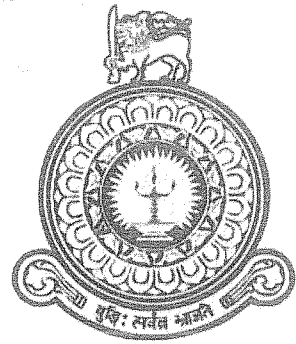


PERMANENT REFERENCE

AC 187



**Investigation of adulterants from turmeric samples in
Sri Lanka**

**A thesis submitted for the Degree of Master of Science in
Analytical Chemistry
Faculty of Science, University of Colombo**

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May 2014

Acknowledgement

I would like to express my sincere gratitude first and foremost to my supervisor Prof. K.R.R. Mahanama, Head of the Department of Chemistry, University of Colombo for his valuable support, guidance and encouragement given to me throughout my research project.

I would like to express my gratitude to Dr. Dilrukshi Wijayarathna, course coordinator of M.Sc. in Analytical Chemistry, and all the academic staff of the Department of Chemistry, University of Colombo for the support given.

I would like to express my sincere gratitude to Mr. Somapala, former government analyst for the enormous support given to me for finding some chemicals and materials that were not available in the university laboratories.

I would like to give my special thanks to the staff of Center for Analytical Research and Development (CARD) for their assistance, specially Mr. Kapila and Mr. Keerthi Ariyasena for his help in the AAS measurements.

I would also like to thank Mr. Ramyalal and Mr. Jayarathna in organic laboratory, Ms. Vajira in inorganic laboratory and Mr. Palitha in biochemistry laboratory, University of Colombo for helping me in numerous ways.

Finally I would like to give my heartiest gratitude to my parents, husband and all other family members for their enormous support and encouragement given to me throughout my research project.

Abstract

Adulteration has been a serious problem for many years in the area of spices including commercial turmeric powder in many countries including Sri Lanka. The objective of this research project was to identify and quantify possible adulterations of commercially available turmeric powder samples in Sri Lanka. Packed turmeric powder samples manufactured from large scale industries with proper quality packaging, packed turmeric powder samples manufactured from small and medium industries with normal packaging and unpacked turmeric powder samples purchased from different areas of Sri Lanka were analyzed against a standard turmeric powder sample to check whether there is a significant quality deviation between these three categories as well as packed and unpacked sample categories.

Packed turmeric powder was reported as the best quality product when comparing with unpacked turmeric powder and packed turmeric powder manufactured from large scale industries with proper quality packaging was reported as the best quality product when comparing with packed turmeric powder manufactured from small and medium industries with normal packaging due to the results obtained for curcumin, total ash, water insoluble ash (WIA), acid insoluble ash (AIA), sodium ion and potassium ion percentages.

Moisture percentage of all commercial turmeric powder samples were within the specified moisture percentage of SLS, ISO and ESA. The results obtained for all commercial turmeric powder samples for several heavy metals (Pb, Cd, Cr), several trace elements with toxicity at higher doses (Zn, Cu, Fe) in water soluble ash and lead chromate were below the detection limit of atomic absorption spectrometer in milligrams per liter level whereas tartrazine or sunset yellow FCF were not present in all above commercial turmeric powder samples.

All the adulterated samples reported in this research project were unpacked turmeric powder samples which indicated that 40% of the selected unpacked turmeric powder samples in Sri Lankan market were adulterated. None of the ten packed turmeric powder samples which were manufactured from large scale industries with proper quality packaging and small and medium industries with normal packaging were reported as adulterated. Although sample size is insufficient to give a clear picture about adulteration of commercially available turmeric powder in Sri Lanka, this research project gives an evidence to choose packed turmeric powder manufactured from large scale industries with proper quality packaging which can be assured as quality products among the variety of commercially available turmeric powder samples in safeguarding the public health.