

**CHEMICAL AND BIOACTIVITY STUDIES
ON
KYAUK-THWAY**

Ph.D. DISSERTATION

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OCTOBER, 2003

Ph.D. (Chemistry)

University of Yangon

Title : **Chemical and Bioactivity Studies on Kyauk-thway**

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Abstract : The main aim of this research was to study the chemical and bioactivity on various kinds of kyauk-thway samples (including natural kyauk-thway and synthetic kyauk-thway) to improve the production of Myanmar indigenous medicines. In the present research, kyauk-thway samples were collected from local area, local market, prepared from iron ore (hematite) and iron salt (ferric sulphate). Morphology of these kyauk-thway samples were studied by SEM. The chemical composition and purity % of these compounds were studied by SEM , UV, FT - IR, ED-XRF and gravimetric analysis. Generally, kyauk-thway was identified as "ferric ammonium citrate". It contains ferric ion, ammonium ion, citrate ion and water molecules. Iron content in various kyauk-thway samples were determined by redox titration. The iron % were found to be in the range of 8.70 – 22.39 % . The nitrogen content of these samples were determined by Kjeldahl method and found to be in the range of 5.30 – 7.69 % . The citric acid contents from these samples were analysed by cation exchange method. These were found to be in the range of 10.50 – 68.50 % . Water contents and ash % (s) were found in the range of 8.08 – 20.63 % and 32.12 – 61.79 % . The trace elemental contents were determined by AAS and ED-XRF. These were

found to be in the range of 0.0340 – 4.3700 % for zinc, 0.0205 – 0.6200 % for copper, 0.1295 – 2.0100 % for manganese, 0.0510 – 0.0998 % for chromium, 0.164 – 34.672 % for calcium. Toxic elements of lead and arsenic were also determined. Lead contents were found to be in the range of 0.00012 – 0.00030 %. However, arsenic contents were not detected in all samples. The UV spectrum of these samples has a peak at wavelength of maximum absorption (λ_{max}) of 275 nm. Acute toxicity test was made by the method of Litchfield and Wilcoxon. In this test, the value of LD_{50} was found to be 3.5 g . Then haemoglobin estimation was determined by Cyanmethae-moglobin method. It was found that amount of haemoglobin was increased in mice blood during one month. By considering all the above facts, the production of Myanmar indigenous medicines may be improved. Thus this research will be of much benefit in the production of high quality indigenous medicines in Myanmar.