

ELEMENTAL ANALYSIS AND BIOCHEMICAL STUDIES

ON TRADITIONAL MEDICINE FORMULATION

HSEEZAYBYU (TMF-21)

Ph. D (DISSERTATION)

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ABSTRACT

Myanmar traditional medicine formulation TMF-21 (Hseezaybyu) was studied. This medicine is used for the treatment of ailments such as urinary disorder, reproductive system disorder and liver disorder. Scientific investigation on the role of element in TMF-21 was attempted. The elements were determined by the Neutron Activation Analysis (NAA), the Atomic Absorption Spectrophotometry (AAS) and Energy Dispersive X-Ray Fluorescence method. Altogether 29 elements namely, Na, Mg, Al, Si, P, S, Cl, K, Ca, Sc, Ti, Cr, Mn, Fe, Co, Cu, Zn, As, Se, Rb, Sr, Zr, Ag, Cd, Sb, Cs, Ba, La and Eu were identified. Among these, eight are major elements [Ca (4.1926%), Si (3.9942%), K (3.3106%), Cl (3.0415%), Na (2.5545%), Al (1.9953%), P (1.6303%), and S (1.3635%)]. It also contained a total of six minor elements [Fe (0.4605%), Sr (0.3070%), Ti (0.2005%), Mg (0.1910%), Mn (0.1867%) and Zr (0.0225%)]. There were 15 trace elements [Ba (0.0059%), Zn (0.0031%), Cd (0.0025%), Ag (0.0020%), Cu (0.0020%), Cr (0.0018%), Rb (0.0011%), As (0.0005%), La (0.0003%), Co (0.0002%), Sb (0.0002%), Sc (0.0001%), Cs (0.0001%), Se (0.00001%) and Eu (0.00001%)]. Moreover it was found out that elements related to ailments associated with TMF-21 such as Na, K, Mg, Ca, Al, Zn, Fe and Ti were present in TMF-21.

Some biochemical investigations were done on TMF-21. Partition experiments suggested that some elements such as S, K, Ca, Ti, Cr, Mn, Fe, Cu, Zn, Sr and Zr might occur as metal organic compounds. According to the

literature, these elements are useful for the treatment of ailments associated with TMF-21. Further studies with phytochemical examination and FT-IR investigation were carried out to find the nature and type of compounds in TMF-21. Additional studies with GC-MS and ¹HNMR revealed that compounds such as stearic acid and palmitic acid might be present. According to literature these two compounds support the urinary excretion. Antibacterial studies on TMF-21 found that, it has low activity against some bacteria (*Staphylococcus aureus*) and fungi (*Mucor miehei*). Since its activity is weak, it may only alter the metabolic reaction inside these organisms.

This work has opened up the field of research on medicinal inorganic chemistry with respect to Myanmar Traditional Medicine.