

**SCREENING, ISOLATION AND  
CHARACTERIZATION OF NATURAL  
ANTIOXIDANTS FROM MYANMAR  
MEDICINAL PLANTS:  
*THEA SINENSIS* LINN. (TEA) AND  
*CURCUMA LONGA* LINN. (NANWIN)**

**PhD ( DISSERTATION )**

**MIE MIE AYE**

**DEPARTMENT OF CHEMISTRY  
UNIVERSITY OF YANGON  
MYANMAR**

**MARCH, 2005**

## ABSTRACT

In the present work, leaves of *Thea sinensis* Linn. (Tea) which is widely consumed in Myanmar as a drink "Green tea" and rhizomes of *Curcuma longa* Linn. (Nanwin) which is used both as a colouring material and as a condiment in Myanmar traditional cooking have been selected and screened for antioxidative activity. The antioxidative activities of the extracts of the two plants were studied by a model system of linoleic acid (Thiocyanate method) in comparison with the synthetic antioxidant butylated hydroxy anisole (BHA). The antioxidative activity of the chloroform extract (% Inh = 75.970) of *T. sinensis* was slightly less than synthetic antioxidant BHA (% Inh = 85.340) by the thiocyanate method after 14<sup>th</sup> day incubation while the antioxidative activity of its ethanol extract (% Inh = 87.055) was higher than that of the synthetic antioxidant BHA. Caffeine (3.9%) from chloroform extract, and catechin (0.0438%) and epicatechin (0.075%) from ethanol extract were isolated by column chromatography on silica gel. Similarly, the chloroform extract (% Inh = 81.779) of *C. longa* showed as nearly effective an antioxidative activity as the synthetic antioxidant BHA by the thiocyanate method. Chromatographic separation of chloroform extract yielded three curcuminoids, namely curcumin (6%), demethoxycurcumin (0.033%) and bisdemethoxycurcumin (0.026%). The isolated compounds were identified by melting point, optical rotation, TLC, UV, FTIR, <sup>1</sup>HNMR, <sup>13</sup>CNMR with DEPT and mass spectrometric methods. Among these isolated compounds, catechin (% Inh = 89.404) from *T. sinensis* and curcumin (% Inh = 88.266) from *C. longa* showed more antioxidative activities than the synthetic antioxidant BHA by the thiocyanate method. Thus, from the above observation, it is found out that, "catechin" and "curcumin" have strong potential to be used as "natural anti-aging substances" for men, and in food industry, they may be employed as "natural antioxidant additives" in place of "synthetic antioxidant additives".

**Key words:** Antioxidative activity; Thiocyanate method; Catechin; Curcumin