Effect of Thai herbal remedy, *Terminalia chebula* fruits, *Cyperus rotundus* rhizomes and *Tinospora cordifolia* wood, extracts on anti-oxidant activity by DPPH scavenging radical assay

Pannawat Chaiyawatthanananthn, PhD, Faculty of Medicine, Thammasat University, Thailand
Arunporn Itharat, PhD, Faculty of Medicine, Thammasat University, Thailand
Sombat Muengtaweepongsa, MD, Faculty of Medicine, Thammasat University, Thailand

Abstract

This remedy consists of 3 herbals; *Terminalia chebula* (TeC), *Cyperus rotundus* (CyR) and *Tinospora cordifolia* (TiC), following as Worayokasarn Scripture of Thai Traditional Medicine. Previous studies shown that polyphenolic extract of TeC fruits (IC_{50} 14 µg/mL) and ethanolic TiC extract (EC_{50} 0.5 mg/ml) reduced antioxidant capacity by measuring 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical activity. Moreover, the increase of methanol extract concentrations of CyR increased %inhibition of oxidation by determining DPPH method. We first investigate the ethanolic and water extract of TeC fruit, CyR rhizome and TiC wood mixture (TCT) on anti-oxidant activity by DPPH assay. Method: TeC fruit, CyR rhizome and TiC wood dry plants (1:1:1) were extracted with 95% ethanol maceration (TCTE) and water decoction (TCTW). After extraction, final concentrations (1, 10, 50 and 100 µg/mL) of the extracts were measured DPPH assay and compared with Butylated hydroxytoluene (BHT) as positive control. After the extracts had been diluted with water or ethanol stepwise, 100 µL of dilution was pipetted into a 96-well plate. One hundred microliters of DPPH solution dissolved in a 50% ethanol solution was added to each well, and the plate was shaken for 5 min at room temperature. The change in absorption at 550 nm was measured using a microplate reader and then calculated with 50% effective concentration (EC_{50}). All data were presented Mean ± SEM and a p-value is 0.05. We found that TCTE power decreased oxidation more than TCTW and BHT by EC_{50} values of TCTE, TCTW and BHT were 4.86±0.47, 12.94±1.47 and 12.86±0.33 µg/mL, respectively. In conclusion, the ethanolic TCT extract displayed the strong anti-oxidant activity. The results supported that TCT remedy should be selected for reducing oxidant and must be study in the future. Further investigation should be carry out lipid peroxidation and other biological studies.

Image

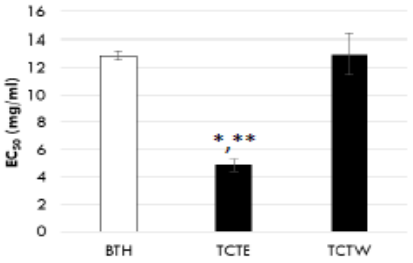


Figure 1: Effect of TCTE and TCTW extracts on anti-oxidation compared with BHT by DPPH assay. *p-value <0.05 vs. BHT group, ** vs. TCTW group

Recent Publications

1. Agarwal S, Mathur RM, Srivastava A, Prakash R (2016) Analysis of Antioxidant activity of tubers of *Cyperus rotundus* Linn. Journal of Ultra Chemistry 12(1): 15-18
2. Blois MS (1958) Antioxidant determinations by the use of a stable free radical. Nature 181: 1199-1200.
3. Premanath R, Lakshmi Devi N (2010) Studies on Anti-oxidant activity of *Tinospora cordifolia* (Miers.) Leaves using in vitro models. Journal of American Science 6(10): 736-743.
4. Saha S, Verma RJ. (2016). Antioxidant activity of polyphenolic extract of *Terminalia chebula* Retzius fruits. Journal of Taibah University for Science 10(6): 805-812.
5. Yamasaki K, Hashimoto A, Kokusenya Y, Miyamoto T, Sato T (1994) Electrochemical method for estimating the antioxidative effects of methanol extracts of crude drugs. Chemical and Pharmaceutical Bulletin 42: 1663-1665.



Biography

Pannawat Chaiyawatthanananthn has his expertise in Thai Traditional Medicine that relating with Thai herbs in improving the health following as the scriptures of Thai Traditional Medicine. The non-communicated diseases is the interesting research especially Stroke and other related diseases. He has built this research from in vitro studies to clinical trials after years of experience in research, evaluation, and teaching in Department of Applied Thai Traditional Medicine, Faculty of Medicine, Thammasat University.

Email: pannawat@tu.ac.th

Notes/Comments: