Evaluation of Tonic Potential of Kamlang Suea Khrong Crude Drugs Originated From Three Medicinal Plants

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Abstract

Kamlang Suea Khrong (KSK), a Thai crude drug that means “the power of tiger,” is one of the approved traditional medicines listed in the official traditional household remedies as analgesic ethnomedicine. KSK could be obtained from parts of at least three plant species, namely, the inner stem bark of *Betula alnoides* Buch.-Ham. ex D.Don (BA), the stem of *Strychnos axillaris* Colebr. (SA), or the stem of *Ziziphus attopensis* Pierre (ZA). The observation data from Thai herbal markets suggested that KSK crude drug is traditionally prepared by boiling in water or macerating in alcohol and taken regularly as tonic drinks to enhance energy, vitality, and longevity. In the present work, the efficacy of KSK based on the herbal tonic concept was observed. Some biological activities involving age-related neurodegenerative disease were evaluated. The ethanolic extract from parts used of BA, SA, and ZA was undertaken to determine radical scavenging and acetylcholinesterase (AChE) inhibitory properties. The results showed that the BA extract possessed the highest activities. The order of DPPH scavenging activity was found as BA (EC_{50} = 11.26 µg/mL) >ZA (EC_{50} = 30.26 µg/mL) >SA (EC_{50} > 100 µg/mL). The order of AChE inhibitory activity of 1 mg/mL of each extract was BA (98%) >SA (19%) >ZA (3%). These findings indicated that although vernacular names and traditional uses of BA, SA, and ZA are identical, their medicinal properties based on scientific experiments might be different. This could occur since BA, SA, and ZA crude drugs are from distinct plant species, leading to their various active constituents and biological effects. Since the understanding of molecular mechanisms underlying the herbal tonic concept helps enhance complementary and alternative medicines achievement, other biological activities related to degenerative disease of KSK crude drugs should be further examined.

Keywords: *Betula alnoides, Strychnos axillaris, Ziziphus attopensis*