Title : Determination of antioxidant and antibacterial activities of kombucha

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ABSTRACT

Kombucha is a beverage made from fermentation of tea with microorganisms such bacteria and yeast. It is rich in antioxidants and probiotics in high amount, which promote the systems in body and control the amount of pathogenic microorganisms. The efficacy of antioxidant activities of kombucha made from four types of tea leaves: green tea, white tea, oolong tea and black tea was compared. Moreover, the anti-bacterial activity against pathogenic enteric bacteria including *E. coli*, *E.coli* O157: H7, *Salmonella* Typhi, *Shigella dysenteriae* and *Vibrio cholerae*. Kombucha was fermented for 14 days and the concentration was increased by evaporating the solvent from the kombucha.The antioxidant activity was tested by the DPPH assay and it was found that kombucha made from green tea showed the highest antioxidant activity, which is 8.27 ± 0.85 mg gallic acid /g extract. When antioxidant activity was tested by the ABTS method, green tea kombucha showed the highest antioxidant value of 40.93 ± 0.06 mg trolox /g extract. In addition, Green and white tea kombucha demonstrated the highest phenolic compounds at 6.43 ± 0.13 and 6.21 ± 0.15 mg gallic acid /g extract, respectively, with no significant difference between them. The highest phenolic compound of 1.45 ± 0.02 mg quercetin /g extract was found from black tea kombucha. The inhibitory effect of kombucha on enteric pathogenic bacteria was investigated by agar well diffusion and broth dilution assays. It was found that kombucha from all four types of tea leaves could not inhibit bacteria at a concentration of 200 mg/ml.

Keywords: Kombucha, Fermented tea, Enteric bacteria, Antioxidant, Antibacterial

(Assoc. Prof. Dr. Yingmanee Tragoolpua)