

Antibacterial activity of Thai red curry paste's ingredients between Using Kang-Pa model and Kang-Kati model on *Salmonella* Sp. and *Listeria monocytogenes* 10403S

Abstract

The authentic Thai red curries are Kang-Pa (aqueous base) and Kang-Kati (coconut milk base). Thai red curry paste, Red curry main ingredient, consists of herbs which have potential to be natural antibacterial agents. Therefore seven herbs of Thai curry paste; Chili (*Capsicum annuum*), Kaffir lime (*Citrus hystrix*), Cumin (*Cuminum cyminum* L.), Shallot (*Allium ascalonicum* L.), Garlic (*Allium sativum*), Lemongrass (*Cymbopogon citrates*), and Galangal (*Alpinia galangal*), were investigated their individual antibacterial activity on *Salmonella enterica* Enteritidis (human), *Salmonella enterica* 4,5,12:i:- (human) US clone, *Listeria monocytogenes* 10403S by agar diffusion method on Salmonella Shigella Agar (SS) and Brain Heart Infusion Agar (*BHI Agar*) under three extractions using homemade authentic cooking as it has been served; Kang-Pa (aqueous extraction), and Kang-Kati (Ultra-high-temperature; UHT, fresh coconut milk extraction). The results from in vitro antibacterial screening showed that among three extraction models on *S. enterica* Enteritidis (human), Kang-Kati using fresh coconut milk showed the highest potential in inhibiting in all herbs and the highest antibacterial activity was found in lemon grass; 0.93 ± 0.10 cm. In Kang-Kati using UHT coconut milk, cumin showed the highest antibacterial activity; 0.80 ± 0.00 cm. Kang-Pa showed the lowest antibacterial activity in all herbs. The minimum inhibitory concentration (MICs), using broth dilution method, of lemon grass showed 160 μ l/ml in Kang-Kati using fresh coconut milk. In Kang-Kati using UHT coconut milk, cumin showed 160 μ l/ml. While *S. Enterica* 4,5,12:i:- (human) US clone, garlic and cumin in Kang-Kati model using fresh coconut milk showed highest antibacterial; 0.90 ± 0.14 cm. Kang-Kati using UHT coconut milk, dry chili showed the highest antibacterial activity; 0.89 ± 0.16 cm and Kang-Pa model, dry chili and shallot gave antibacterial activity; 0.80 ± 0.00 cm. The MIC of garlic and cumin showed 160 μ l/ml in fresh coconut milk Kang-Kati. In UHT coconut milk Kang-Kati, dry chili showed 80 μ l/ml and Kang-Pa, dry chili showed 80 μ l/ml and shallot showed 160 μ l/ml. For *L. monocytogenes* 10403S, Kang-Kati using fresh coconut milk, the highest antibacterial activity was found in kaffir lime peel; 0.88 ± 0.11 cm. In Kang-Kati using UHT coconut milk, kaffir lime peel and lemon grass gave highest antibacterial activity; 0.8 ± 0.00 cm. Kang-Pa, kaffir lime peel showed the highest antibacterial activity; 0.80 ± 0.00 cm. The MIC of kaffir lime peel showed 160 μ l/ml in Kang-Kati using fresh coconut milk. In Kang-Kati using UHT coconut milk, MIC of Kaffir lime peel and lemon grass showed 160 and 80 μ l/ml respectively and in Kang-Pa, kaffir lime peel showed 160 μ l/ml. The minimum bactericidal concentrations (MBCs) of all herbs under three extraction models, using broth dilution method, showed $>160 \mu$ l/ml. The Thai red curry paste ingredients showed the significantly promising antibacterial activity against food-borne pathogen, *S. enterica* Enteritidis (human), *S. Enterica* 4,5,12:i:- (human) US clone and , *L. monocytogenes* 10403S. It can be suggested that Thai red curry is functional food.

Keywords: Thai red curry paste, Kang-Kati, Kang-Pa, natural antibacterial, *Salmonella enterica* Enteritidis (human), *Salmonella enterica* 4,5,12:i:- (human) US clone, *Listeria monocytogenes* 10403S