Antimicrobial activity of flavonoid extracts from Sabah tea (Camellia sinensis) against Escherichia coli and Listeria monocytogenes

Abstract

The antimicrobial activity of tea (Camellia sinensis) flavonoids against selected foodborne pathogens, Escherichia coli 0157:H7 and Listeria monocytogenes was studied. Flavonoid, hydrolysed flavonoid, flavanol and crude catechin were extracted from fresh and dried tea leaf samples. The activities of each extract on both pathogens were tested using paper disc diffusion method. Extracts producing inhibition zone of more than 8.0 mm were further investigated to determine their minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC). Hydrolysed flavonoid of dried samples was the most active extract against E. coli O157:H7 and L. monocytogenes with inhibition zone of 16.0 ± 1.4 mm and 22.0 ± 1.4 mm respectively. The MIC of hydrolysed flavonoid extract from fresh samples on E. coli O157:H7 was 9.7 mg/ml while the MBC was 11.7 mg/ml. Listeria monocytogenes was inhibited at a minimum concentration of 5.86 mg/ml by the same extract. Crude catechin from fresh sample was less effective in controlling L. monocytogenes with a MIC of 93.8 mg/ml, which was also its MBC. The time required for the reduction of L. monocytogenes count by one log cycle was the shortest (1.87 h) in the presence of hydrolysed flavonoid extract at MBC (6.83 mg/ml).