

Abstract

Phyllanthus emblica or Indian gooseberry is a traditional and medicinal plant that can be commonly found in Asia and Southeast Asia. It has been widely used to cure various disease especially in India as an Ayurvedic medicine. It is reported to possess free radical scavenging, antioxidant, anti-inflammatory, antimicrobial, and anti-mutagenic. The preliminary aim of this research is to develop *Phyllanthus emblica* extract-loaded BSA nanoparticles (PBNP) production to improve bioavailability. PBNP was prepared by using desolvation method with three different ratio of *Phyllanthus emblica* 95% ethanol crude extract: BSA (1:2, 1:3, 1:4). The releasing behavior of crude extract of *P.emblica* using 95% ethanol and PBNP will be investigated by performing in-vitro simulated gastrointestinal digestive system. The antioxidant activity of in-vitrosimulated gastrointestinal digestive system will be determined by DPPH radical scavenging activity. The result showed that the releasing behavior of PBNP tended to be higher at low pH condition in artificial gastrointestinal digestive system. However, *Phyllanthus emblica* 95% ethanol crude extract was more stable than PBNP. Antimicrobial activity is determined by using well agar diffusion method to evaluate the effectiveness of inhibition of PBNP with three different ratio between *P.emblica* 95% crude extract:BSA (1:2, 1:3, 1:4) and *P.emblica* 95% ethanol crude extract against seven food borne pathogens *Salmonella enterica* Typhimurium U302 (DT104b), *Salmonella enteric* Enteritidis (human), *Salmonella enterica* 4,5,12:i:-(human) US clone, *Bacillus cereus*, *Bacillus subtilis*, *Staphylococcus aureus*, *Escherichia coli* ATCC25822. The results prove that PBNP using three different ratio (1:2,1:3,1:4) and three concentration (100,200,300µg/ml) had no significantly different inhibition against the growth of seven food borne pathogens ($p>0.05$). bacteria.

Keywords: *Phyllanthus emblica*, Nanoparticles, bioavailability, antioxidant, antimicrobial.