

Ramification of pH in pectinase-assisted extraction on the antioxidant capacity of Arabica spent coffee ground (SCG) extract

ABSTRACT

Spent coffee ground (SCG) is the by-product of coffee processing that is produced up to 45% in coffee beverage and instant coffee processing and is believed to contain high amounts of antioxidants. Despite the fact that SCG has exerted many advantages, the information on obtaining the antioxidant values using enzymes are still scarce. The objective of the study was therefore to determine the total phenolic and flavonoid content of antioxidant activity and antimicrobial activity in Arabica SCG extracted using pectinase at different pH values. Arabica SCG was extracted using pectinase at pH 3, pH 4, pH 5, pH 6 and pH 7 and analyzed for its anti-microbial activity and antioxidant properties (DPPH, FRAP, total phenolic and total flavonoid content along with individual flavonoids using HPLC). Arabica SCG was extracted using pectinase at pH 3, pH 4, pH 5, pH 6 and pH 7 and analyzed for its antimicrobial activity and antioxidant properties (DPPH, FRAP, total phenolic and total flavonoid content along with individual flavonoids using HPLC). The result showed that the antioxidant capacity of the SCG extract at pH 4 exhibited higher DPPH and FRAP values. The total phenolic and flavonoid content exhibited in $(1.38 \pm 4.42, \text{ mg GAE/g sample})$ and $(22.57 \pm 0.27 \text{ mg QE/g of dry sample})$. Flavonoids namely quercetin, kaempferol, rutin, gallic acid, catechin, epigallocatechin gallate, pcoumaric acid and myricetin were present in all samples at various levels. The SCG in pH 7 extract showed the highest concentrations of the individual flavonoid compound in the sample and the highest inhibition zone on *Pseudomonas aeruginosa* and *Staphylococcus aureus*. Thus, the optimum pH of the pectinase which is pH 4-5 had provided the highest yield in antioxidant capacity and activity of the Arabica SCG extract with this extraction method that can be used for food preservation as well as in the nutraceutical industry.