Phytochemical composition and biological activities of selected wild berries (Rubus moluccanus L., R. fraxinifolius Poir., and R. alpestris Blume)

Abstract

Berries, from the genus Rubus, are among the vital components in a healthy diet. In this study, 80% methanol extracts from the three wild Rubus species (Rubus moluccanus L., Rubus fraxinifolius Poir., and Rubus alpestris Blume) were evaluated for their phytochemical contents (total phenolics, flavonoid, anthocyanin, and carotenoid content), antioxidant (DPPH, FRAP, and ABTS assays), antiacetylcholinesterase, and antibacterial activities. GC-MS was used for quantification of naturally occurring phytochemicals. The results showed that R. alpestris contained the highest total phenolic [mg gallic acid equivalent (GAE)/g] and carotenoid content [mg β-carotene equivalents (BC)/g], as well as the highest DPPH scavenging and FRAP activities. The highest total flavonoid [mg catechin equivalents (CE)/g] and anthocyanin content [mg cyanidin-3-glucoside equivalents (c-3-gE)/g] have been shown by R. moluccanus. For antibacterial assays, R. moluccanus and R. alpestris extracts showed mild inhibition towards Bacillus subtilis, Staphylococcus aureus, Escherichia coli, and Salmonella enteritidis. Anticholinesterase activity for all extracts was in the range of 23–26%. The GC-MS analysis revealed the presence of at least 12, 21, and 7 different organic compounds in 80% methanol extracts of R. alpestris, R. moluccanus, and R. fraxinifolius, respectively, which might contribute to the bioactivity.