

ABSTRACT:

Different bioactive flavonoid compounds including catechin, epicatechin, rutin, myricetin, luteolin, apigenin and naringenin were obtained from spearmint (*Menthaspicata*L.) leaves by using conventional soxhlet extraction (CSE) and supercritical carbon dioxide (SC-CO₂) extraction at different extraction schemes and parameters. The effect of different parameters such as temperature (40, 50 and 60 °C), pressure (100, 200 and 300 bar) and dynamic extraction time (30, 60 and 90 min) on the super critical carbon dioxide (SC-CO₂) extraction of spearmint flavonoids was investigated using full factorial arrangement in a completely randomized design (CRD). The extracts of spearmint leaves obtained by CSE and optimal SC-CO₂ extraction conditions were further analyzed by high performance liquid chromatography (HPLC) to identify and quantify major bioactive flavonoid compounds profile. Comparable results were obtained by optimum SC-CO₂ extraction condition (60 °C, 200 bar, 60 min) and 70% ethanol soxhlet extraction. As revealed by the results, soxhlet extraction had a higher crude extract yield (257.67 mg/g) comparing to the SC-CO₂ extraction (60.57 mg/g). Supercritical carbon dioxide extract (optimum condition) was found to have more main flavonoid compounds (seven bioactiveflavonoids) with high concentration comparing to the 70% ethanol soxhlet extraction (five bioactiveflavonoids). Therefore, SC-CO₂ extraction is considered as an alternative process compared to the CSE for obtaining the bioactiveflavonoid compounds with high concentration from spearmint leaves.