LC-QTOF-MS analysis of phenolics and saponins extracted from Aloe vera leaves via microwave technology in optimal condition

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ABSTRACT

Aloe vera is one of the well-known medicinal plants in the family of Liliaceae. The aim of this research was to identify the yield of extraction, total saponin content (TSC) and total phenolic content (TPC) of Aloe vera leaves extracted in the optimal condition via microwave-assisted extraction (MAE). LC-QTOF-MS analysis was used to identify bioactive compounds of saponin and phenolics in the extract. The MAE factors including time of irradiation (2–3 min), ethanol concentration (20–60%), microwave power (400–600 W) and feed-to-solvent ratio (1:18–1:22 g/mL) were applied and optimized using response surface methodology (RSM) after a pre-factor evaluation using one-factor-at-a-time (OFAT) experiment. Results indicated that the optimal condition for MAE of Aloe vera leaves were at 2.79 min, 478.95 W, 43.38% ethanol, and 1:19 g/mL. Where, based on these conditions, the extraction yield, TPC and TSC were 36.17%, 73. 05 mg GAE/g d.w, 65.89 mg OAE/g d.w, respectively. The LC-QTOF-MS results of Aloe vera leaves extract in optimized condition of MAE indicated a total of 32 phenolics and 29 saponin compounds including steroid and triterpenoid saponins. The FTIR results also confirmed the existence of these compounds.

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