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Triggering Apoptosis to Uproot Breast Cancer: HPLC-MS/MS Profiling, in-vitro and in-silico Fascinating Results of Polyphenolics in Pomegranate Rind Extract

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Abstract : Using HPLC-MS/MS technique, 133 polyphenolic compounds were identified in the methanol extract of pomegranate rind (Punica granatum L.). In-vitro cytotoxic activity against breast cancer cell line MCF-7 was investigated, with an IC50 of 54 ug/ml. In-silico molecular docking using ellagic acid, gallagic acid, and Punicalagin as model compounds identified in pomegranate rind extract confirmed the intriguing anti-estrogenic action of the key polyphenolic components in pomegranate rind extract. Surprisingly, taxol showed low activity compared to pomegranate compounds as ERα antagonist and ERβ agonist. Pomegranate rind extract enhanced apoptosis of breast cancer cells through upregulation of the caspase-3 expression and downregulation of NF-κB transcription factor.

Keywords : HPLC-MS/MS, pomegranate rind, cytotoxicity, MCF-7, ER, caspase-3, NF-kB
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