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Rapid Expansion Supercritical Solution (RESS) Carbon Dioxide as an Environmental Friendly Method for Ginger Rhizome Solid Oil Particles Formation

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Abstract : Recently, RESS (Rapid Expansion Supercritical Solution) method has been used by researchers to produce fine particles for pharmaceutical drug substances. Since RESS technology acknowledges a lot of benefits compare to conventional method of ginger extraction, it is suggested to use this method to explore particle formation of bioactive compound from powder ginger. The objective of this research is to produce direct solid oil particles formation from ginger rhizome which contains valuable compounds by using RESS-CO₂ process. RESS experiments were carried using extraction pressure of 3000, 4000, 5000, 6000 and 7000psi and at different extraction temperature of 40, 45, 50, 55, 60, 65 and 70°C for 40 minutes extraction time and contant flowrate (24ml/min). From the studies conducted, it was found that at extraction pressure 5000psi and temperature 40°C, the smallest particle size obtained was 2.22μm on 99 % reduction from the original size of 370μm.

Keywords : particle size, RESS, solid oil particle, supercritical carbon dioxide,
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