

Fabrication of carrier-free apigenin nanoparticles using antisolvent crystallization technology

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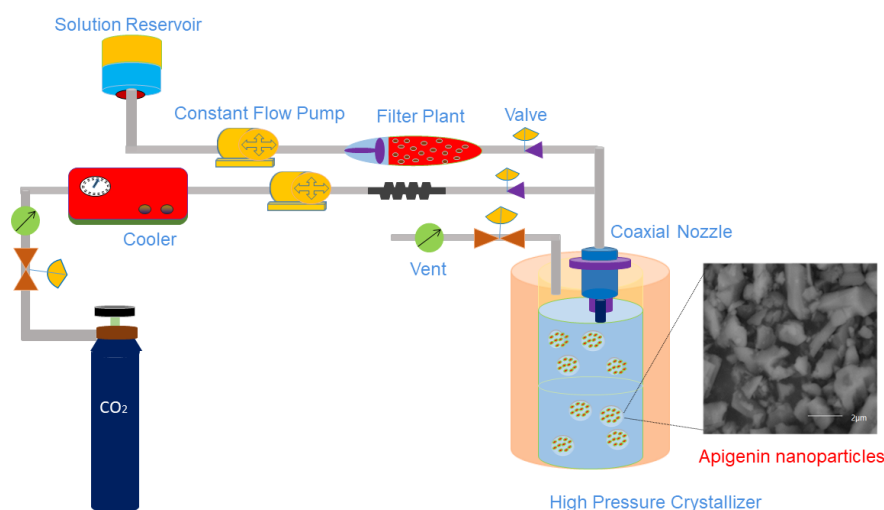
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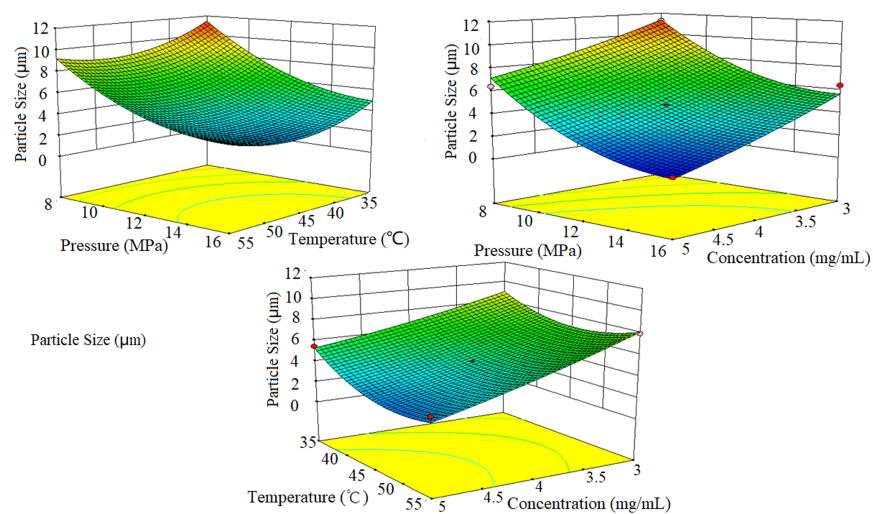
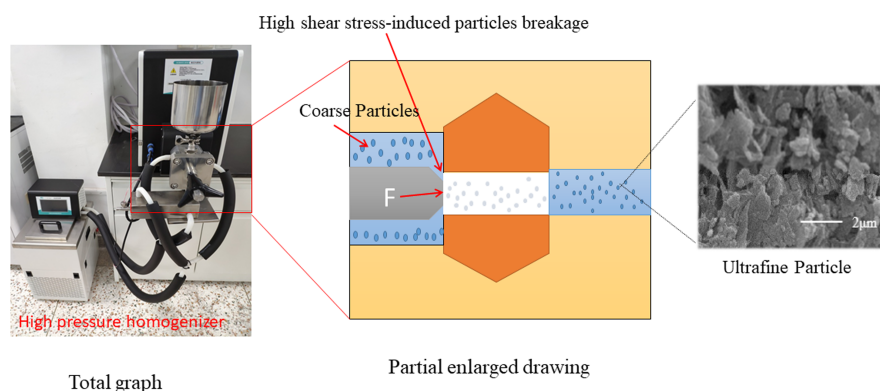
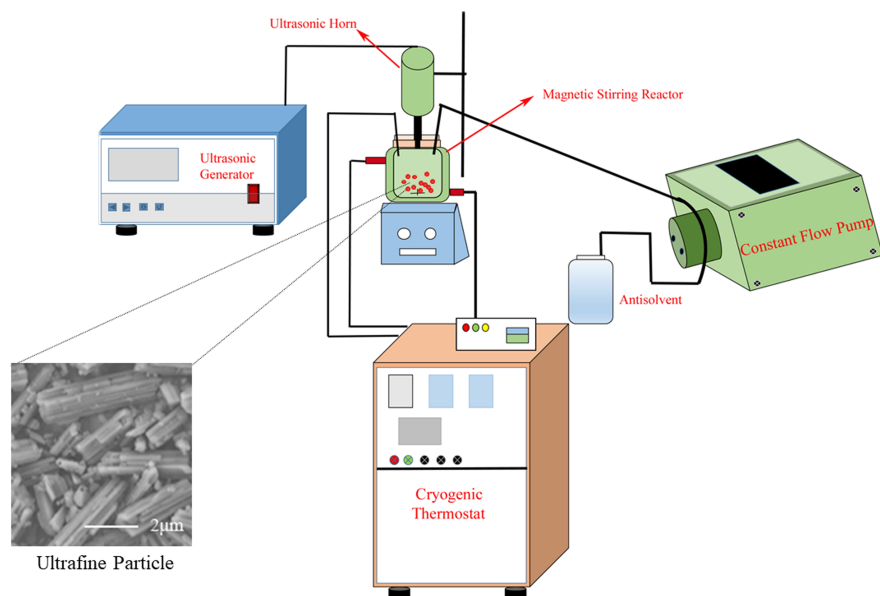
Abstract

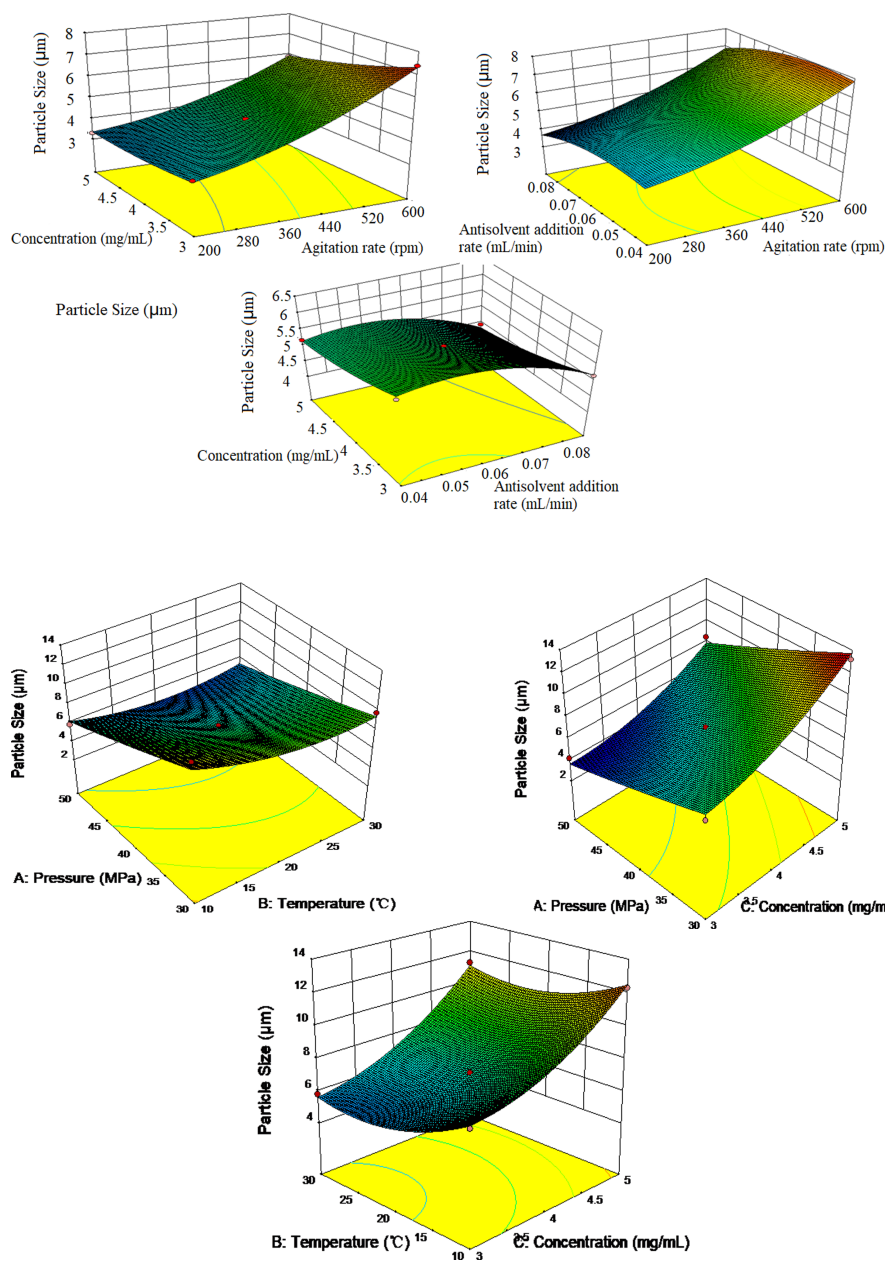
To overcome poor solubility of flavonoids, carrier-free apigenin (API) microparticles and nanoparticles were prepared using three types of antisolvent precipitation technologies: supercritical antisolvent (SCF) technology, ultrasonic-assisted liquid antisolvent (UAL) technology, and high-pressure homogenization (HPH) technology. The preparation, characterization, and potential use of API microparticles and nanoparticles to improve in vitro release were studied. The resulting API particles were investigated and compared by FTIR, DSC, XRD, and SEM analysis. We determined the optimum conditions for SCF, UAL, and HPH technologies to produce API microparticles and nanoparticles. The antioxidant and antitumor properties of the API particles were also investigated. The results demonstrated that the reduced particle size of the APIs prepared via SCF, UAL, and HPH technologies contributed to the enhanced dissolution rate, which in turn enhanced API bioactivity.

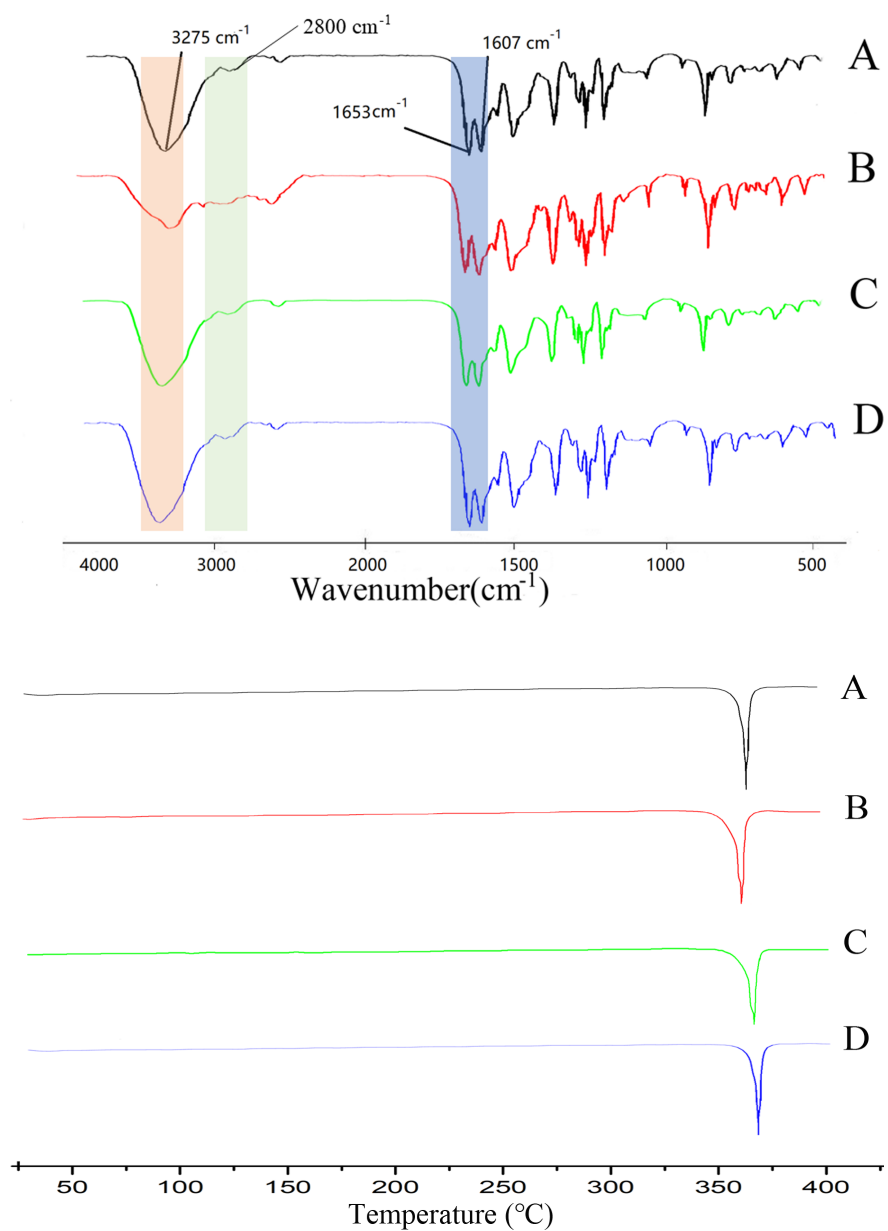
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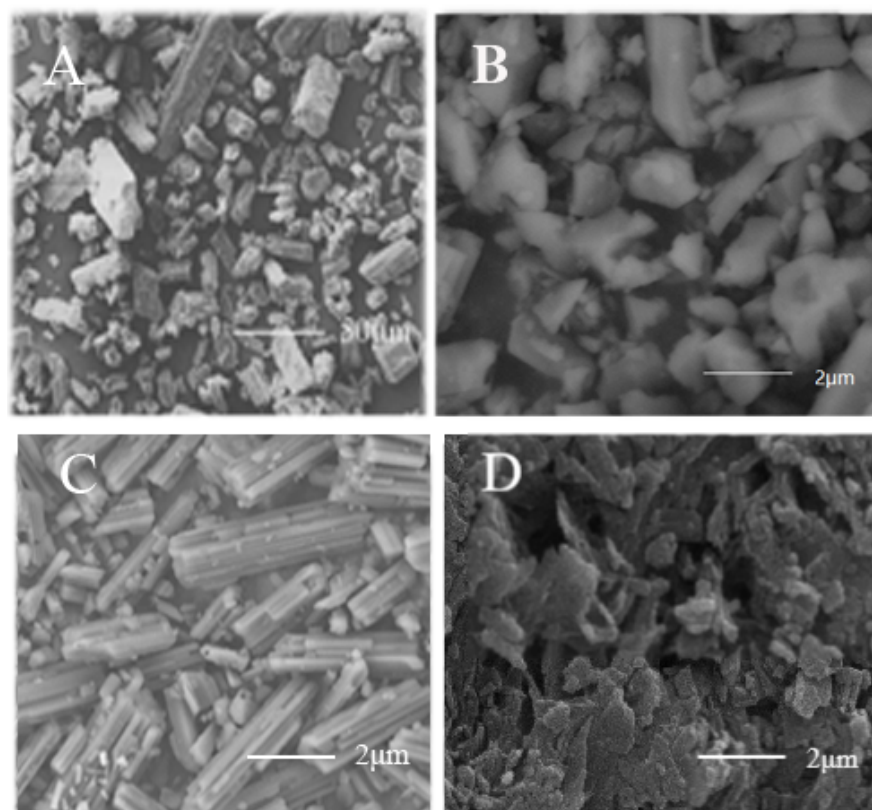
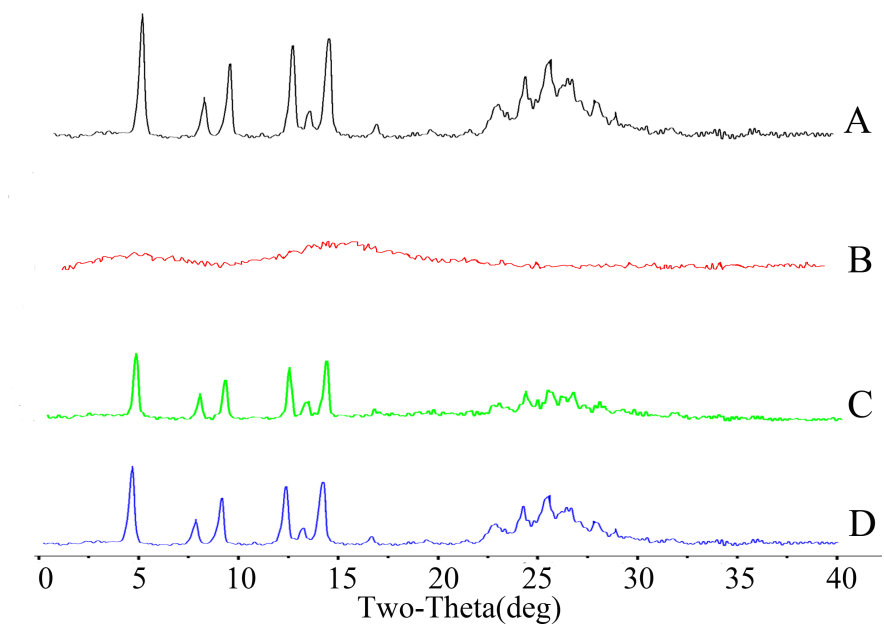
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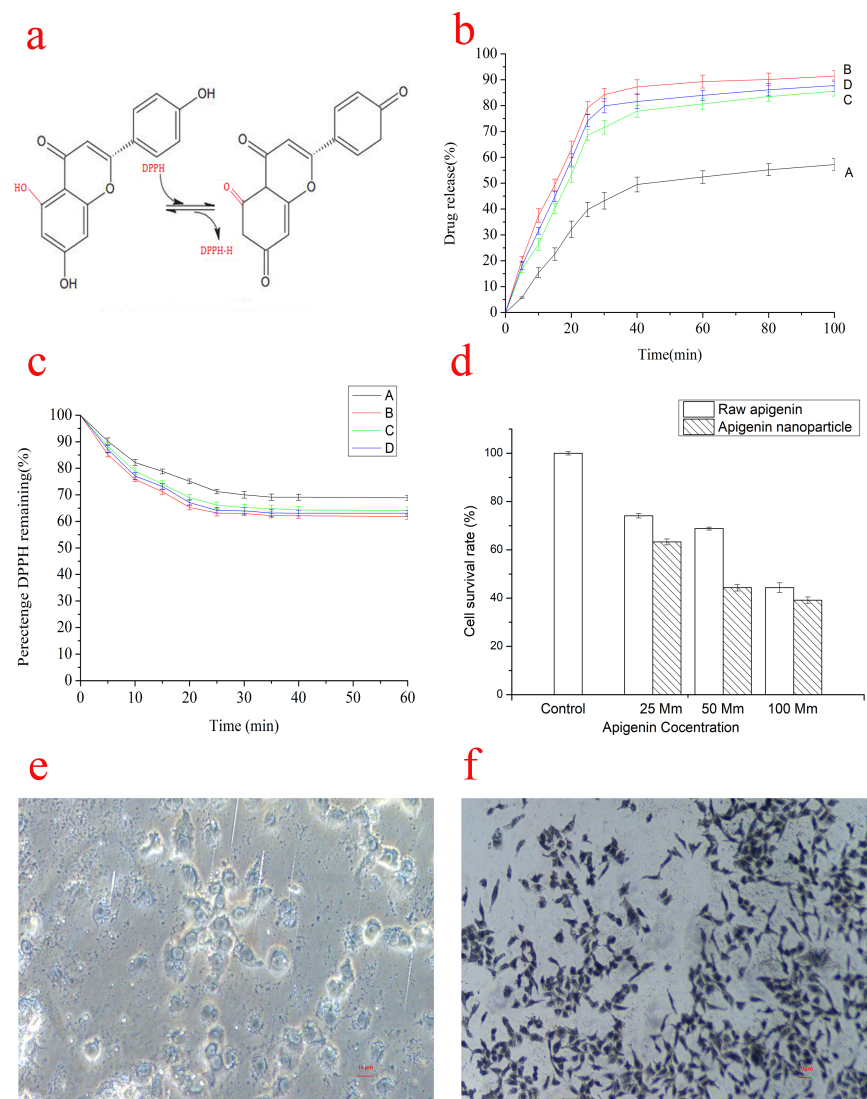












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