World Academy of Science, Engineering and Technology
International Journal of Chemical and Materials Engineering
Vol:8, No:12, 2014

Ultrafine Non Water Soluble Drug Particles

Authors : Shahnaz Mansouri, David Martin, Xiao Dong Chen, Meng Wai Woo

Abstract : Ultrafine hydrophobic and non-water-soluble drugs can increase the percentage of absorbed compared to their initial dosage. This paper provides a scalable new method of making ultrafine particles of substantially insoluble water compounds specifically, submicron particles of ethanol soluble and water insoluble pharmaceutical materials by steaming an ethanol droplet to prepare a suspension and then followed by immediate drying. This suspension is formed by adding evaporated water molecules as an anti-solvent to the solute of the samples and in early stage of precipitation continued to dry by evaporating both solvent and anti-solvent. This fine particle formation has produced fast dispersion powder in water. The new method is an extension of the antisolvent vapour precipitation technique which exposes a droplet to an antisolvent vapour with reference to the dissolved materials within the droplet. Ultrafine vitamin D3 and ibuprofen particles in the submicron ranges were produced. This work will form the basis for using spray dryers as high-throughput scalable micro-precipitators.

Keywords : single droplet drying, nano size particles, non-water-soluble drugs, precipitators
Conference Title : ICACCE 2014 : International Conference on Applied Chemistry and Chemical Engineering
Conference Location : London, United Kingdom
Conference Dates : December 22-23, 2014