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Preparation of Active Proteins, Vaccines and Pharmaceuticals as Fine Powders using Supercritical or Near-Critical Fluids

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Resumen: Supercritical or near-critical fluid processes for generating microparticles have enjoyed considerable attention in the past decade or so, with good success for substances soluble in supercritical fluids or organic solvents. In this review, we survey their application to the production of protein particles. A recently developed process known as CO₂-assisted nebulization with a Bubble Dryer® (CAN-BD) has been demonstrated to have broad applicability to small-molecule as well as macromolecule substances (including therapeutic proteins). The principles of CAN-BD are discussed as well as the stabilization, micronization and drying of a wide variety of materials. More detailed case studies are presented for three proteins, two of which are of therapeutic interest: anti-CD4 antibody (rheumatoid arthritis), α 1-antitrypsin (cystic fibrosis and emphysema), and trypsinogen (a model enzyme). Dry powders were formed in which stability and activity are maintained and which are fine enough to be inhaled and reach the deep lung. Enhancement of apparent activity after CAN-BD processing was also observed in some formulation and processing conditions. [PUBLICATION ABSTRACT]

Enlaces: [Biblioteca Digital TEC](#)

Materia: Proteins; Pharmacology; Scientific method; Aerosols;

MeSH: Animals, Antibodies -- chemistry, Antigens, CD4 -- immunology, Carbon Dioxide -- chemistry, Chemistry, Pharmaceutical, Drug Stability, Enzyme Stability, Humans, Nebulizers & Vaporizers, Particle Size, Powders, Protein Denaturation, Solvents -- chemistry, Technology, Pharmaceutical -- instrumentation, Trypsinogen -- chemistry, alpha 1-Antitrypsin -- chemistry, Chromatography, Supercritical Fluid (principal), Chromatography, Supercritical Fluid (principal) -- instrumentation, Proteins -- chemistry (principal), Technology, Pharmaceutical -- methods (principal), Vaccines -- chemistry (principal)

Sustancia: Antibodies; Antigens, CD4; Powders; Proteins; Solvents; Vaccines; alpha 1-Antitrypsin; Carbon Dioxide; Trypsinogen;

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