Microencapsulation: The Optimal Delivery System for Cannabis Extracts

Abstract

Recent advancements in extraction and purification methods have resulted in the production of cannabinoids with higher purity indexes for use in both medical research and the cannabis edibles. Once CBD/THC compounds have been extracted these must be stabilized and protected from oxidation, Uv corruption and from environmental conditions that breakdown compounds preventing prolonged shelf life. A novel method of producing CBD/THC nanospheres and nano-emulsions using starches, sugars or fats and water so that powdered CBD/THC can be used to control dosing in beverages and edibles. is described. Cannabinoids, like THC or CBD, are encapsulated with a starch or carbohydrates/oil. When this happens, the nanoscopic cannabinoid droplets melt. Sugar-starch-oil nanospheres can then dissolve in liquids. Nanoscopic sugar-starch-oil cannabinoid droplets can melt in liquids or be released in food matrixes. In one configuration sugar-starch-oil nanospheres can dissolve in liquids while another configuration allows active release at specific temperatures or altitudes. A novel method of microencapsulating CBD and TCH compounds has been reduced to practice utilizing the coplanar, coaxial microencapsulation methodology first reduced to practice as a "Spinoff" technology during space shuttle flight missions STS-41 and STS 43 resulting in production of the first commercial microspheres in space. Unlike conventional, costly and complicated mechanical methods of microencapsulation, e.g., fluid bed deposition, ion/cation production, phase-pulsed and coascervative spray or spray-drying methods that result in production of asymmetrical (xenophobic) manufactures in a perpendicular drop column, the coplanar/coaxial process is based on Astrophysics and employs all-natural phase change materials, e.g., waxes, sugars, starches, which are dispersed along coplanar/coaxial elliptical pathways allowing separate molecules to align along Von Karmen Vortices and to recombine as a function of succinct control of the Van derWaals Effect the to create uniformly-shaped, nearly-perfectly rounded excipient manufactures in sizes ranging from <1um (.789 Angstrom Units) to >5000um in the gravity conditions on earth. Results of experiments to date are discussed demonstrating successful nano-encapsulation of CBD oils using starches/sugars/fats. CBD/THC extracts can be formed into nanoparticles for use in creating nano-emulsions which can be used to create new dose-controlled components for foods, beverages adjuvants, tinctures and higher quality edibles.

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