
Intellectual Property Estate

Utility Patents

Enhancing the Aqueous Solubility and Bioavailability of Cannabinoids and Other Plant-Derived Molecules

- United States Patent 7,182,950

Nano-sized Self-Assembled Liquid Dilutable Vehicles

Nano-sized self-assembled structured concentrates are used as carriers for efficiently transferring active medicinal components into the human body. The nano-sized self-assembled concentrates are composed of an aqueous phase, an oil phase, a surfactant a cosolvent and co-surfactant. The formed nano-sized self-assembled structured concentrates may be in the form of an aqueous continuous phase, an oil continuous phase or a bicontinuous phase, and may thus be diluted to any desired extent in either oil or water maintaining their structure and the active material comprised within the nano-sized self-assembled structured concentrates.

- World - WO2010150262
- United States -- 2013/0034538; 2498754

Reverse Hexagonal Mesophases (HII) and Uses Thereof

These novel drug carriers enable friendlier oral, oro-mucosal transdermal and oral administration of numerous drugs (both water –soluble and water-insoluble, small molecules and large peptides and proteins, DNA, and more) in place of intravenous administration. These provide enhanced drug solubilization and protect drugs from enzymatic degradation and secondary structural transitions. In vivo tests have demonstrated oral delivery as efficient as intravenous administration of drugs like calcitonin, concerning which oral intake otherwise yields limited bioavailability.

- Israel Patent Application No. 248150 – Full submission, PCT (international) application successfully made

Method for Selective Extraction of Cannabinoids from a Plant Source

Nano-sized self-assembled liquid vehicles designed to selectively bind with a cannabinoid of choice -- with great specificity -- and thus separate the bound cannabinoid from a complex solution. Elevated bioavailability of the bound cannabinoid simultaneously results.

- Israel Patent Application No. 248149 – Full submission, PCT (international) application successfully made

Dilutable Formulations of Cannabinoids and Processes for Their Preparation

Nano-constructs to encapsulate specific cannabinoids and render said cannabinoid fully water soluble and otherwise readily dilutable in aqueous solutions. Elevated bioavailability of the cannabinoid of choice is an outfall of encapsulation.

- Provisional Patent (date secured)

Novel Nanodroplet Encapsulation for Protecting Medicinal Compounds from Transformation in the Gastrointestinal Tract

Water-soluble nano-constructs that protect medicinal compounds from chemically reactive conditions existing in the highly-acidic environment of the stomach, while rendering said medicinal compounds more readily transportable across the wall of the small intestine.

Use Patents

Cannabinoids for Treating Adverse Health Conditions

Note that ANANDA Scientific has NOT limited itself to cannabidiol (CBD) alone and instead has use across the spectrum of cannabinoid molecules.

- United States Patent: 6410588
- Europe Patent: 1071417
- Israel Patent: 138979
- Germany Patent: 6992367.108

Use of Cannabinoids as Anti-Inflammatory Agents

This patent teaches that cannabinoids, like cannabidiol, can be used to treat inflammatory diseases. Cannabinoids for use in treating inflammatory diseases, methods of treating inflammatory diseases and cannabinoids in combination with pharmaceutically acceptable carriers are claimed. Cannabinoids, especially cannabidiol, can be used as an antiinflammatory agent against inflammatory diseases, especially rheumatoid arthritis or Crohn's Disease, sarcoidosis, asthma, Alzheimer's disease, multiple sclerosis, Psoriasis, ulcerative colitis, osteoarthritis or spondyloarthritis.

NOTE: United States Patent 6630507, Cannabinoids as Antioxidants and Neuroprotectant, is the only cannabinoid-related intellectual property possessed by the United States government, specifically the Department of Health and Human Services. It may be the bestknown cannabinoid patent due to its government ownership. Descending from and issued almost one year after the patent held by ANANDA Scientific, it is not as comprehensive and largely addresses the treatment of conditions of lesser public health significance and market size.

- United States Patent: 8071641
- Europe Patent: 1720535

Treating or Preventing Diabetes with Cannabidiol

This patent teaches the use of cannabidiol for the treatment or prevention of diabetes and/or insulinitis.

Although many of the symptoms of diabetes mellitus may be controlled by insulin therapy, the long-term complications of both type I and type II diabetes mellitus are severe and may reduce life expectancy by as much as one third. Over time, elevated blood glucose levels damage blood vessels, the heart, eyes, kidneys, nerves, autonomic nervous system, skin, connective tissue, and white blood cell function. Moreover, insulin therapy may result in insulin allergy, insulin resistance, atrophy of the subcutaneous fat at the site of insulin injection (i.e., lipoatrophy), enlargement of subcutaneous fat deposit (i.e., lipohypertrophy) due to lipogenic action of high local concentration of insulin, and insulin edema.

There is thus a widely recognized need for, and it would be highly advantageous to have new, safe and effective therapies for diabetes mellitus. Accordingly, the present invention provides a novel method and an article of manufacture for treating or preventing diabetes mellitus and related disorders. Unlike insulin, the primary therapy for diabetes, cannabidiol actually seems able to reverse, perhaps cure and maybe even prevent the disease.

- Europe Patent: 2007376

Therapeutic Uses of Cannabidiol Compounds

This patent teaches the use of cannabidiol for the treatment of cardiovascular disorders -- any one or more of the following indications: (1) for the treatment of heart scars or the prevention of formation of heart scars; (2) for reducing or preventing elevation of blood/plasma lipid levels; the blood/plasma lipid levels comprising, without being limited thereto, triglyceride levels, low density lipoprotein (LDL) levels, LDL/HDL ratio and/or total cholesterol level; (3) for reducing atherosclerosis plaque load or preventing the build-up of atherosclerosis plaques on the internal walls of blood vessels; (4) for improving cardiac function; (5) for the treatment or prevention of atherosclerosis.

Also, the patent teaches the use of cannabidiol for the treatment of heart scars or for the prevention of heart scar formation. Cannabidiol is applicable as a therapy for heart scars formed following myocardial ischemia and more preferably due to myocardial infarct. It may be used to prevent or decrease the formation of the scar, or to improve scar parameters of an already existing scar.

Utility Patents

Other

- Provisional Patent – 62/122371

Temporary Inhibition of the Cytochrome P-450 System to Minimize First Pass Metabolism Degradation and to Otherwise Augment the Oral Delivery of Biological Compounds into the Bloodstream

The invention specified herein is an article of manufacture comprised of purified, natural or synthetic biological compounds and/or natural plant extracts and/or natural plant concentrates compounded with furanocoumarin derivatives.

- Provisional Patent – 62/122373

Extracting, Separating and Solubilizing Cannabinoids and Other Biological Compounds from Plant Material via Novel Emulsifier-Based Mixtures

The invention specified herein is a novel process in which cannabinoids and other biological compounds are extracted from plant material by using emulsifiers as solvents. An emulsifier is a molecule with an oil-soluble or lipophilic end and a water-soluble or hydrophilic end. Such a molecular configuration makes it possible to mix two or more substances that would otherwise separate into their component parts under other conditions.

The plant material subjected to extraction with emulsifiers consists of the flowering heads, leaves, stems and other plant parts from *Cannabis sativa*, *C. indica* and *C. ruderalis*, the three plant species that uniquely produce a family of terpeno-phenolic compounds called cannabinoids, as well as the same plant parts from other plant species.

- Provisional Patent – 62/122372

Essential Oils, Terpenes and Terpenoids for Extracting Cannabinoids and Other Biological Compounds from Plant Material

The invention specified herein is a novel process in which cannabinoids and other biological compounds are extracted from plant material by using essential oils, terpenes and/or terpenoids as solvents. Essential oils are concentrated, plant-derived hydrophobic liquids that include volatile compounds with the distinctive scents, or essences, of the plants from which these are derived. Terpenes are unsaturated hydrocarbons that occur in the essential oils of plants. These compounds are composed of isoprene units (i.e., unsaturated, branched chain, five-carbon hydrocarbons) and have the general formula $(C_5H_8)_n$.

Terpenoids, also known as isoprenoids, are modified terpenes with functional groups such as ketones, aldehydes, or alcohols added to the basic, unsaturated isoprene skeleton. A terpenoid skeleton may differ from the strict additivity of isoprene units seen in terpenes by the loss or shift of a molecular fragment, generally a methyl group.