Research

Click on any of the links below

GENERAL

• Safety and side effects of cannabidiol, a Cannabis sativa constituent (PubMed)
• Cannabidiol: From an inactive cannabinoid to a drug with wide spectrum of action (PubMed)
• Cannabidiol as an emergent therapeutic strategy for lessening the impact of inflammation on oxidative stress (PubMed)
• Cannabidiol: An overview of some pharmacological aspects (PubMed)
• Cannabidiol: An overview of some chemical and pharmacological aspects. Part I: chemical aspect (PubMed)
• The endocannabinoid system as an emerging target of pharmacotherapy (PubMed)
• Therapeutic potential of cannabinoid-based drugs (PubMed)
• Targeting the endocannabinoid system with cannabinoid receptor agonists: Pharmacological strategies and therapeutic possibilities (PubMed)
• Cannabis-based medicines–GW pharmaceuticals: High CBD, high THC, medicinal cannabis–GW pharmaceuticals, THC:CBD (PubMed)
• The therapeutic potential of cannabis and cannabinoids (PubMed)
• Emerging strategies for exploiting cannabinoid receptor agonists as medicines (PubMed)
• Therapeutic potential of cannabinoid-based drugs (PubMed)
• Cannabinoids in clinical practice (PubMed)
• Cannabinoids (PubMed)
• Pharmacology of cannabinoids (PubMed)
• Combined cannabinoid therapy via an oromucosal spray (PubMed)
• Non-psychotropic plant cannabinoids: new therapeutic opportunities from an ancient herb (PubMed)
• Opposite effects of delta-9-tetrahydrocannabinol and cannabidiol on human brain function and psychopathology (PubMed)
• Care and feeding of the endocannabinoid system: a systematic review of potential clinical interventions that upregulate the endocannabinoid system (PubMed)
• Understanding the molecular aspects of tetrahydrocannabinol and cannabidiol as antioxidants (PubMed)
• A tale of two cannabinoids: the therapeutic rationale for combining tetrahydrocannabinol and cannabidiol (PubMed)
• Clinical Studies With Cannabis and Cannabinoids, 2005-2009 (O'Shaughnessy’s)

ACNE

• Cannabidiol as a Treatment for Acne? (O'Shaughnessy’s)
• Cannabidiol exerts sebostatic and antiinflammatory effects on human sebocytes (PubMed)
• The endocannabinoid system of the skin in health and disease: Novel perspectives and therapeutic opportunities (PubMed)
• Endocannabinoids enhance lipid synthesis and apoptosis of human sebocytes via cannabinoid receptor-2-mediated signaling (PubMed)
• Endocannabinoid signaling and epidermal differentiation (PubMed)
ADD/ADHD

- Cannabidiol and clozapine reverse MK-801-induced deficits in social interaction and hyperactivity in Sprague-Dawley rats (PubMed)
- Searching for a Neurobiological Basis for Self-Medication Theory in ADHD Comorbid With Substance Use Disorders (PubMed)
- Subtypes of Attention Deficit — Hyperactivity Disorder (ADHD) and cannabis use (PubMed)
- Childhood and current ADHD symptom dimensions are associated with more severe cannabis outcomes in college students (PubMed)
- Oral delta 9-tetrahydrocannabinol improved refractory Gilles de la Tourette syndrome in an adolescent by increasing intracortical inhibition: A case report (PubMed)
- Fitness to drive in spite (because) of THC (PubMed)

ADDITION

- Inhibition of monoacylglycerol lipase enzyme reduces nicotine withdrawal (PubMed)
- Cannabidiol reduces cigarette consumption in tobacco smokers (PubMed)
- Cannabidiol inhibits the reward-facilitating effect of morphine (PubMed)
- Cannabidiol, a nonpsychotropic component of cannabis, inhibits cue-induced heroin seeking and normalizes discrete mesolimbic neuronal disturbances (PubMed)
- Differential effect of cannabinol and cannabidiol on THC-induced responses during abstinence in morphine-dependent rats (PubMed)
- Impact of Cannabis Use during Stabilization on Methadone Maintenance Treatment (PubMed)
- Medical cannabis laws and opioid analgesic overdose mortality in the United States, 1999-2010 (PubMed)
- Dysregulation of cannabinoid CB1 receptor and associated signaling networks in brains of cocaine addicts and cocaine-treated rodents (PubMed)
- Comparison of cannabidiol, antioxidants, and diuretics in reversing binge ethanol-induced neurotoxicity (PubMed)
- Transdermal delivery of cannabidiol attenuates binge alcohol-induced neurodegeneration in a rodent model of an alcohol use disorder (ScienceDirect)
- Cannabidiol for the treatment of cannabis withdrawal syndrome (PubMed)
- Cannabis use disorders are comparatively prevalent among nonwhite racial/ethnic groups and adolescents: a national study (PubMed)

AIDS

- Cannabidiol inhibits growth and induces programmed cell death in kaposi sarcoma-associated herpes virus-infected endothelium (PubMed)

ALS

- Cannabis and amyotrophic lateral sclerosis: hypothetical and practical applications, and a call for clinical trials (PubMed)
- Medical Cannabis Helps ALS Patient Outlive her Own Doctor (Jahan Marcu)
ALZHEIMER’S

• The therapeutic potential of the endocannabinoid system for Alzheimer’s disease (PubMed)
• Endocannabinoid signalling in Alzheimer’s disease (PubMed)
• A molecular link between the active component of marijuana and Alzheimer’s disease pathology (PubMed)
• Neuroprotective effect of cannabidiol, a non-psychoactive component from Cannabis sativa, on beta-amyloid-induced toxicity in PC12 cells (PubMed)
• The Potential Therapeutic Effects of THC on Alzheimer’s Disease (PubMed)
• The Role of Endocannabinoid Signaling in the Molecular Mechanisms of Neurodegeneration in Alzheimer’s Disease (PubMed)
• Cannabinoids for the treatment of dementia (PubMed)
• Cannabidiol in vivo blunts beta-amyloid induced neuroinflammation by suppressing IL-1beta and iNOS expression (PubMed)
• Cannabidiol: A promising drug for neurodegenerative disorders? (PubMed)
• Cannabinoid receptor 1 deficiency in a mouse model of Alzheimer’s disease leads to enhanced cognitive impairment despite of a reduction in amyloid deposition (PubMed)
• The role of the endocannabinoid system in Alzheimer’s disease: facts and hypotheses (PubMed)
• The role of phytochemicals in the treatment and prevention of dementia (PubMed)
• Cannabinoids for the treatment of dementia (PubMed)
• Cannabidiol Promotes Amyloid Precursor Protein Ubiquitination and Reduction of Beta Amyloid Expression in SHSY5YAPP+ Cells Through PPARγ Involvement (PubMed)
• Cannabinoids for treatment of Alzheimer’s disease: moving toward the clinic (PubMed)
• Can Marijuana Prevent Alzheimer’s? (Next Avenue)

ANOREXIA

• Leptin, ghrelin, and endocannabinoids: Potential therapeutic targets in anorexia nervosa (PubMed)
• The role of the endocannabinoid system in eating disorders: Neurochemical and behavioural preclinical evidence (PubMed)
• Cancer cachexia and cannabinoids (PubMed)

ANTIBIOTIC RESISTANCE

• Antibacterial cannabinoids from Cannabis sativa: A structure-activity study (PubMed)
• Antibacterial activity of delta9-tetrahydrocannabinol and cannabidiol (PubMed)

ANXIETY

• Cannabidiol, a Cannabis sativa constituent, as an anxiolytic drug (PubMed)
• Antidepressant-Like and Anxiolytic-Like Effects of Cannabidiol: A Chemical Compound of Cannabis Sativa (PubMed)
• Cannabidiol reduces the anxiety induced by simulated public speaking in treatment-naïve social phobia patients (PubMed)
• Neural basis of anxiolytic effects of cannabidiol (CBD) in generalized social anxiety disorder (PubMed)
• Central anandamide deficiency predicts stress-induced anxiety: behavioral reversal through endocannabinoid augmentation (PubMed)
• Effects of cannabidiol (CBD) on regional cerebral blood flow (PubMed)
• The anxiolytic-like effects of cannabidiol injected into the bed nucleus of the stria terminalis are mediated by 5-HT1A receptors (PubMed)
• The anxiolytic effect of cannabidiol on chronically stressed mice depends on hippocampal neurogenesis: involvement of the endocannabinoid system (PubMed)
• Plant-based medicines for anxiety disorders, part 2: A review of clinical studies with supporting preclinical evidence (PubMed)
ATHEROSCLEROSIS
• The role of the endocannabinoid system in atherosclerosis (PubMed)
• Cannabinoid receptors in atherosclerosis (PubMed)
• The potential use of cannabidiol in the therapy of metabolic syndrome (PubMed)

ARTHITIS
• Preliminary assessment of the efficacy, tolerability and safety of a cannabis-based medicine (Sativex) in the treatment of pain caused by rheumatoid arthritis (PubMed)
• Involvement of the endocannabinoid system in osteoarthritis pain (PubMed)
• The abnormal cannabidiol analogue O-1602 reduces nociception in a rat model of acute arthritis via the putative cannabinoid receptor GPR55 (PubMed)

ASTHMA
• The role of cannabinoids in inflammatory modulation of allergic respiratory disorders, inflammatory pain and ischemic stroke (PubMed)
• Allergen challenge increases anandamide in bronchoalveolar fluid of patients with allergic asthma (PubMed)
• Activation of cannabinoid receptors prevents antigen-induced asthma-like reaction in guinea pigs (PubMed)
• Endogenous cannabinoid receptor agonists inhibit neurogenic inflammations in guinea pig airways (PubMed)
• Bronchodilator effect of delta1-tetrahydrocannabinol (PubMed)

AUTISM
• Mutations found in individuals with autism interfere with endocannabinoid signaling in the brain (Science Daily)
• Cannabinoid receptor type 2, but not type 1, is up-regulated in peripheral blood mononuclear cells of children affected by autistic disorders (PubMed)
• A novel approach to the symptomatic treatment of autism (Lester Grinspoon M.D., O'Shaughnessy's)
• Consequences of cannabinoid and monoaminergic system disruption in a mouse model of autism spectrum disorders (PubMed)
• Targeting the endocannabinoid system in the treatment of fragile X syndrome (PubMed)

BIPOLAR
• Cannabinoids in bipolar affective disorder: A review and discussion of their therapeutic potential (PubMed)
• Cannabidiol was ineffective for manic episode of bipolar affective disorder (PubMed)

CANCER
General
• Cannabidiol as potential anticancer drug (PubMed)
• Cannabidiol inhibits angiogenesis by multiple mechanisms (PubMed)
• The inhibitory effects of cannabidiol on systemic malignant tumors (PubMed)
• Cannabidiol inhibits cancer cell invasion via upregulation of tissue inhibitor of matrix metalloproteinases-1 (PubMed)
• Marijuana fights cancer and helps manage side effects (Daily Beast)

Lung
• Cannabidiol inhibits lung cancer cell invasion and metastasis via intercellular adhesion molecule-1C (PubMed)
• COX-2 and PPAR-y confer cannabidiol-induced apoptosis of human lung cancer cells (PubMed)
• Decrease of plasminogen activator inhibitor-1 may contribute to the anti-invasive action of cannabidiol on human lung cancer cells (PubMed)
• Media ignored expert’s shocking findings that marijuana helps prevent lung cancer (O'Shaughnessy's)
Prostate / Colon

- Towards the use of non-psychoactive cannabinoids for prostate cancer (PubMed)
- In Vitro Anticancer Activity of Plant-Derived Cannabidiol on Prostate Cancer Cell Lines (Scirp.org)
- Induction of apoptosis by cannabinoids in prostate and colon cancer cells is phosphatase dependent (PubMed)
- Chemopreventive effect of the non-psychotropic phytocannabinoid cannabidiol on experimental colon cancer (PubMed)

Breast

- Antitumor activity of plant cannabinoids with emphasis on the effect of cannabidiol on human breast carcinoma (PubMed)
- Cannabidiol induces programmed cell death in breast cancer cells by coordinating the cross-talk between apoptosis and autophagy (PubMed)
- Pathways mediating the effects of cannabidiol on the reduction of breast cancer cell proliferation, invasion, and metastasis (PubMed)
- Cannabidiol as a novel inhibitor of Id-1 gene expression in aggressive breast cancer cells (PubMed)
- Cannabidiolic acid, a major cannabinoid in fiber-type cannabis, is an inhibitor of MDA-MB-231 breast cancer cell migration (PubMed)
- Cannabidiolic acid, a major cannabinoid in fiber-type cannabis, is an inhibitor of MDA-MB-231 breast cancer cell migration (PubMed)

Glioblastoma / Brain

- Cannabidiol enhances the inhibitory effects of delta9-tetrahydrocannabinol on human glioblastoma cell proliferation and survival (PubMed)
- Antitumor effects of cannabidiol, a nonpsychoactive cannabinoid, on human glioma cell lines (PubMed)
- Systematic review of the literature on clinical and experimental trials on the antitumor effects of cannabinoids in gliomas (PubMed)
- Cannabidiol inhibits human glioma cell migration through a cannabinoid receptor-independent mechanism (PubMed)
- Id-1 is a key transcriptional regulator of glioblastoma aggressiveness and a novel therapeutic target (PubMed)
- Triggering of the TRPV2 channel by cannabidiol sensitizes glioblastoma cells to cytotoxic chemotherapeutic agents (PubMed)
- Cannabidiol, a non-psychoactive cannabinoid compound, inhibits proliferation and invasion in U87-MG and T98G glioma cells through a multitarget effect (PubMed)
- Local delivery of cannabinoid-loaded microparticles inhibits tumor growth in a murine xenograft model of glioblastoma multiforme (PubMed)

Leukemia

- Cannabidiol-Induced Apoptosis in Human Leukemia Cells (PubMed)

Skin

- Anticancer activity of anandamide in human cutaneous melanoma cells (PubMed)

Kaposi Sarcoma

- Cannabidiol inhibits growth and induces programmed cell death in kaposi sarcoma-associated herpes virus-infected endothelium (PubMed)
Endocrine
- **Endocannabinoids in endocrine and related tumours** (PubMed)
- **A comparative study on cannabidiol-induced apoptosis in murine thymocytes and EL-4 thymoma cells** (PubMed)

Bladder
- **TRPV2 activation induces apoptotic cell death in human T24 bladder cancer cells: a potential therapeutic target for bladder cancer** (PubMed)

Pain
- **Multicenter, double-blind, randomized, placebo-controlled, parallel-group study of the efficacy, safety, and tolerability of THC:CBD extract and THC extract in patients with intractable cancer-related pain** (PubMed)
- **Nabiximols for opioid-treated cancer patients with poorly-controlled chronic pain: a randomized, placebo-controlled, graded-dose trial** (PubMed)
- **Marijuana extract helps prevent chemo pain** (UPI)

COLITIS/CROHN’S DISEASE
- **Cannabidiol in inflammatory bowel diseases: a brief overview** (PubMed)
- **Cannabis finds its way into treatment of Crohn's disease** (PubMed)
- **Cannabidiol reduces intestinal inflammation through the control of neuroimmune axis** (PubMed)
- **Cannabidiol, a safe and non-psychotropic ingredient of the marijuana plant Cannabis sativa, is protective in a murine model of colitis** (PubMed)
- **The effects of Delta-tetrahydrocannabinol and cannabidiol alone and in combination on damage, inflammation and in vitro motility disturbances in rat colitis** (PubMed)
- **Topical and systemic cannabidiol improves trinitrobenzene sulfonic acid colitis in mice** (PubMed)
- **Cannabinoids and the gut: New developments and emerging concepts** (PubMed)
- **Endocannabinoids and the gastrointestinal tract** (PubMed)
- **Cannabinoids and gastrointestinal motility: Animal and human studies** (PubMed)
- **Hergenrather presents study of Crohn’s patients as a template for clinical research on Cannabis** (O'Shaughnessy’s)

DEPRESSION
- **Endocannabinoid system dysfunction in mood and related disorders** (PubMed)
- **Antidepressant-Like and Anxiolytic-Like Effects of Cannabidiol: A Chemical Compound of Cannabis Sativa** (PubMed)
- **The endocannabinoid system and the treatment of mood and anxiety disorders** (PubMed)
- **Endocannabinoid signaling in the etiology and treatment of major depressive illness** (PubMed)
- **Antidepressant-like effects of cannabidiol in mice: Possible involvement of 5-HT1A receptors** (PubMed)
- **Putative role of endocannabinoid signaling in the etiology of depression and actions of antidepressants** (PubMed)
- **Antidepressant-like effect of delta9-tetrahydrocannabinol and other cannabinoids isolated from Cannabis sativa** (PubMed)
- **Circulating endocannabinoids and N-acyl ethanolamines are differentially regulated in major depression and following exposure to social stress** (PubMed)
- **Serum contents of endocannabinoids are correlated with blood pressure in depressed women** (PubMed)
- **The therapeutic potential of the endocannabinoid system for the development of a novel class of antidepressants** (PubMed)
- **Antidepressants and Changes in Concentration of Endocannabinoids and N-Acylethanolamines in Rat Brain Structures** (PubMed)
DIABETES
• The impact of marijuana use on glucose, insulin, and insulin resistance among US adults (American Journal of Medicine)
• Cannabidiol attenuates cardiac dysfunction, oxidative stress, fibrosis, and inflammatory and cell death signaling pathways in diabetic cardiomyopathy (PubMed)
• Cannabidiol lowers incidence of diabetes in non-obese diabetic mice (PubMed)
• Neuroprotective and blood-retinal barrier-preserving effects of cannabidiol in experimental diabetes (PubMed)
• Cannabidiol arrests onset of autoimmune diabetes in NOD mice (PubMed)
• Diabetic retinopathy: Role of inflammation and potential therapies for anti-inflammation (PubMed)
• Cannabinoids alter endothelial function in the Zucker rat model of type 2 diabetes (PubMed)
• The endocannabinoid system in obesity and type 2 diabetes (PubMed)
• Cannabinoids and endocannabinoids in metabolic disorders with focus on diabetes (PubMed)
• The endocannabinoid system and plant-derived cannabinoids in diabetes and diabetic complications (PubMed)
• Cannabinoid-mediated modulation of neuropathic pain and microglial accumulation in a model of murine type 1 diabetic peripheral neuropathic pain (PubMed)
• Biochemical and immunohistochemical changes in delta-9-tetrahydrocannabinol-treated type 2 diabetic rats (PubMed)
• Endocannabinoid system participates in neuroendocrine control of homeostasis (PubMed)
• The emerging role of the endocannabinoid system in endocrine regulation and energy balance (PubMed)
• Endocannabinoids in endocrine and related tumours (PubMed)
• Role of the endocannabinoid system in food intake, energy homeostasis and regulation of the endocrine pancreas (PubMed)
• The role of the endocannabinoid system in the neuroendocrine regulation of energy balance (PubMed)

ENDOCRINE DISORDERS
• Endocannabinoid system participates in neuroendocrine control of homeostasis (PubMed)
• The emerging role of the endocannabinoid system in endocrine regulation and energy balance (PubMed)
• Endocannabinoids in endocrine and related tumours (PubMed)
• Role of the endocannabinoid system in food intake, energy homeostasis and regulation of the endocrine pancreas (PubMed)
• The role of the endocannabinoid system in the neuroendocrine regulation of energy balance (PubMed)

EPILEPSY/SEIZURES
• CBD for children with Dravet’s and intractable seizures (Video)
• Report of a parent survey of cannabidiol-enriched cannabis use in pediatric treatment-resistant epilepsy (PubMed)
• Medicinal marijuana stops seizures, brings hope to a little girl (Gazette, Colorado Springs)
• Cannabinoids for epilepsy (PubMed)
• Cannabis, cannabidiol, and epilepsy – From receptors to clinical response (PubMed)
• Chronic administration of cannabidiol to healthy volunteers and epileptic patients (PubMed)
• Endocannabinoid system protects against cryptogenic seizures (PubMed)
• Cannabidiol: promise and pitfalls (PubMed)
• Cannabidiol: Pharmacology and potential therapeutic role in epilepsy and other neuropsychiatric disorders (PubMed)
• Report of a parent survey of cannabidiol-enriched cannabis use in pediatric treatment-resistant epilepsy (Epilepsy Association of Utah)
• From the Editors: Cannabidiol and medical marijuana for the treatment of epilepsy (PubMed)
• Cannabidivarin (CBDV) suppresses pentylenetetrazole (PTZ)-induced increases in epilepsy-related gene expression (PubMed)
• Cannabidiol exerts anti-convulsant effects in animal models of temporal lobe and partial seizures (PubMed)
• Cannabidiol displays antiepileptiform and antiseizure properties in vitro and in vivo (PubMed)
• Hypnotic and antiepileptic effects of cannabidiol (PubMed)
• The cannabinoids as potential antiepileptics (PubMed)
• Cannabidiol–antiepileptic drug comparisons and interactions in experimentally induced seizures in rats (PubMed)
FIBROMYALGIA
• Clinical endocannabinoid deficiency (CECD): Can this concept explain therapeutic benefits of cannabis in migraine, fibromyalgia, irritable bowel syndrome and other treatment-resistant conditions?  (PubMed)
• Cannabis use in patients with fibromyalgia: effect on symptoms relief and health-related quality of life  (PubMed)

GLAUCOMA
• Neuroprotective effect of (-)Delta9-tetrahydrocannabinol and cannabidiol in N-methyl-D-aspartate-induced retinal neurotoxicity: involvement of peroxynitrite  (PubMed)
• Effect of sublingual application of cannabinoids on intraocular pressure: A pilot study  (PubMed)

HEART DISEASE
• Is the cardiovascular system a therapeutic target for cannabidiol?  (PubMed)
• Acute administration of cannabidiol in vivo suppresses ischaemia-induced cardiac arrhythmias and reduces infarct size when given at reperfusion  (PubMed)
• Cannabidiol attenuates cardiac dysfunction, oxidative stress, fibrosis, and inflammatory and cell death signaling pathways in diabetic cardiomyopathy  (PubMed)
• The Effect of Cannabidiol on Ischemia/Reperfusion-Induced Ventricular Arrhythmias: The Role of Adenosine A1 Receptors  (PubMed)
• Cannabidiol, a nonpsychoactive Cannabis constituent, protects against myocardial ischemic reperfusion injury  (PubMed)
• Endocannabinoids acting at cannabinoid-1 receptors regulate cardiovascular function in hypertension  (PubMed)
• Oleamide: A fatty acid amide signaling molecule in the cardiovascular system?  (PubMed)

HUNTINGTON'S DISEASE
• Neuroprotective effects of phytocannabinoid-based medicines in experimental models of Huntington's disease  (PubMed)
• Cannabinoids: Novel medicines for the treatment of Huntington's disease  (PubMed)
• Sativex-like combination of phytocannabinoids is neuroprotective in malonate-lesioned rats, an inflammatory model of Huntington’s disease: role of CB(1) and CB(2) receptors  (PubMed)
• Controlled clinical trial of cannabidiol in Huntington's disease  (PubMed)
• Prospects for cannabinoid therapies in basal ganglia disorders  (PubMed)
• Neuroprotective Properties of Cannabigerol in Huntington’s Disease: Studies in R6/2 Mice and 3-Nitropropionate-lesioned Mice  (PubMed)

INFLAMMATION
• Cannabidiol as an emergent therapeutic strategy for lessening the impact of inflammation on oxidative stress  (PubMed)
• The endocannabinoid system: an emerging key player in inflammation  (PubMed)
• Anti-inflammatory role of cannabidiol and O-1602 in cerulein-induced acute pancreatitis in mice  (PubMed)
• Cannabinoids, endocannabinoids, and related analogs in inflammation  (PubMed)
• Cannabidiol, a non-psychotropic plant-derived cannabinoid, decreases inflammation in a murine model of acute lung injury: role for the adenosine A(2A) receptor  (PubMed)
• Cannabinoids suppress inflammatory and neuropathic pain by targeting q3 glycine receptors  (PubMed)
• Cannabidiol reduces intestinal inflammation through the control of neuroimmune axis  (PubMed)
• Diabetic retinopathy: Role of inflammation and potential therapies for anti-inflammation  (PubMed)
• Cannabidiol reduces Aβ-induced neuroinflammation and promotes hippocampal neurogenesis through PPARγ involvement (PubMed)
• Cannabidiol attenuates high glucose-induced endothelial cell inflammatory response and barrier disruption (PubMed)
• Vanilloid TRPV1 receptor mediates the antihyperalgesic effect of the nonpsychoactive cannabinoid, cannabidiol, in a rat model of acute inflammation (PubMed)
• Cannabidiol attenuates cisplatin-induced nephrotoxicity by decreasing oxidative/nitrosative stress, inflammation, and cell death (PubMed)
• Cannabinoids in clinical practice (PubMed)

IRRITABLE BOWEL
• Cannabidiol in inflammatory bowel diseases: A brief overview (PubMed)
• Cannabidiol reduces intestinal inflammation through the control of neuroimmune axis (PubMed)
• Clinical endocannabinoid deficiency (CECD): Can this concept explain therapeutic benefits of cannabis in migraine, fibromyalgia, irritable bowel syndrome and other treatment-resistant conditions? (PubMed)
• Cannabinoid actions at TRPV channels: Effects on TRPV3 and TRPV4 and their potential relevance to gastrointestinal inflammation (PubMed)
• Therapeutic potential of cannabinoid-based drugs (PubMed)
• Beneficial effect of the non-psychotrophic plant cannabinoid cannabigerol on experimental inflammatory bowel disease (Biochemical Pharmacology) (PubMed)
• Cannabinoids and the gut: New developments and emerging concepts (PubMed)
• Endocannabinoids and the gastrointestinal tract (PubMed)
• Cannabinoids and gastrointestinal motility: Animal and human studies (PubMed)

KIDNEY DISEASE
• Cannabidiol attenuates cisplatin-induced nephrotoxicity by decreasing oxidative/nitrosative stress, inflammation, and cell death (PubMed)

LIVER DISEASE
• The endocannabinoid system and liver diseases (PubMed)
• Cannabidiol protects against hepatic ischemia/reperfusion injury by attenuating inflammatory signaling and response, oxidative/nitrative stress, and cell death (PubMed)
• Cannabidiol causes activated hepatic stellate cell death through a mechanism of endoplasmic reticulum stress-induced apoptosis (PubMed)
• Therapeutic potential of cannabidiol against ischemia/reperfusion liver injury in rats (PubMed)
• Role of myeloid-derived suppressor cells in amelioration of experimental autoimmune hepatitis following activation of TRPV1 receptors by cannabidiol (PubMed)
• Cannabidiol improves brain and liver function in a fulminant hepatic failure-induced model of hepatic encephalopathy in mice (PubMed)
• Cannabidiol ameliorates cognitive and motor impairments in mice with bile duct ligation (PubMed)

METABOLIC SYNDROME
• The impact of marijuana use on glucose, insulin, and insulin resistance among US adults (American Journal of Medicine)
• The potential use of cannabidiol in the therapy of metabolic syndrome (PubMed)
• Cannabinoids and endocannabinoids in metabolic disorders with focus on diabetes (PubMed)
MIGRAINE

• Clinical endocannabinoid deficiency (CECD): Can this concept explain therapeutic benefits of cannabis in migraine, fibromyalgia, irritable bowel syndrome and other treatment-resistant conditions? (PubMed)
• Effects of anandamide in migraine: data from an animal model (PubMed)
• Cannabinoids and hallucinogens for headache (PubMed)
• The endocannabinoid system and migraine (PubMed)
• Variations in the cannabinoid receptor 1 gene predispose to migraine (PubMed)

MOOD DISORDERS

• Multiple mechanisms involved in the large-spectrum therapeutic potential of cannabidiol in psychiatric disorders (PubMed)
• The endocannabinoid system and the treatment of mood and anxiety disorders (PubMed)
• The endocannabinoid system and psychiatric disorders (PubMed)
• The endocannabinoid system in the regulation of emotions throughout lifespan: A discussion on therapeutic perspectives (PubMed)
• Endocannabinoid system dysfunction in mood and related disorders (PubMed)
• Effects of cannabidiol (CBD) on regional cerebral blood flow (PubMed)

MOTION SICKNESS

• Motion sickness, stress and the endocannabinoid system (PubMed)

MULTIPLE SCLEROSIS

• Sativex for the management of multiple sclerosis symptoms (PubMed)
• THC and CBD oromucosal spray (Sativex®) in the management of spasticity associated with multiple sclerosis (PubMed)
• Clinical efficacy and effectiveness of Sativex, a combined cannabinoid medicine, in multiple sclerosis-related spasticity (PubMed)
• Cannabidiol provides long-lasting protection against the deleterious effects of inflammation in a viral model of multiple sclerosis: A role for A2A receptors (PubMed)
• Oromucosal delta9-tetrahydrocannabinol/cannabidiol for neuropathic pain associated with multiple sclerosis: An uncontrolled, open-label, 2-year extension trial (PubMed)
• Nabiximols in the treatment of spasticity, pain and urinary symptoms due to multiple sclerosis (PubMed)
• Sativex long-term use: An open-label trial in patients with spasticity due to multiple sclerosis (PubMed)
• A double-blind, randomized, placebo-controlled, parallel-group study of Sativex, in subjects with symptoms of spasticity due to multiple sclerosis (PubMed)
• Meta-analysis of cannabis based treatments for neuropathic and multiple sclerosis-related pain (PubMed)
• Sativex: Clinical efficacy and tolerability in the treatment of symptoms of multiple sclerosis and neuropathic pain (PubMed)

NAUSEA

• Regulation of nausea and vomiting by cannabinoids and the endocannabinoid system (PubMed)
• Cannabidiol, a non-psychotropic component of cannabis, attenuates vomiting and nausea-like behaviour via indirect agonism of 5-HT(1A) somatodendritic autoreceptors in the dorsal raphe nucleus (PubMed)
• Cannabidiolic acid prevents vomiting in Suncus murinus and nausea-induced behaviour in rats by enhancing 5-HT1A receptor activation (PubMed)
• Interaction between non-psychotropic cannabinoids in marihuana: effect of cannabigerol (CBG) on the anti-nausea or anti-emetic effects of cannabidiol (CBD) in rats and shrews (PubMed)
• Regulation of nausea and vomiting by cannabinoids (PubMed)
• Cannabidiol, a non-psychoactive component of cannabis and its synthetic dimethylheptyl homolog suppress nausea in an experimental model with rats (PubMed)
• Preliminary efficacy and safety of an oromucosal standardized cannabis extract in chemotherapy-induced nausea and vomiting (PubMed)

NEURODEGENERATION
• Cannabidiol: A promising drug for neurodegenerative disorders? (PubMed)
• Cannabidiol for neurodegenerative disorders: Important new clinical applications for this phytocannabinoid? (PubMed)
• Memory-rescuing effects of cannabidiol in an animal model of cognitive impairment relevant to neurodegenerative disorders (PubMed)

NEUROPATHIC PAIN
• Meta-analysis of cannabis based treatments for neuropathic and multiple sclerosis-related pain (PubMed)
• Sativex: Clinical efficacy and tolerability in the treatment of symptoms of multiple sclerosis and neuropathic pain (PubMed)
• Cannabis, pain, and sleep: Lessons from therapeutic clinical trials of Sativex, a cannabis-based medicine (PubMed)
• Sativex successfully treats neuropathic pain characterised by allodynia: A randomised, double-blind, placebo-controlled clinical trial (PubMed)
• Cannabinoids for neuropathic pain (PubMed)
• Neuropathic orofacial pain: Cannabinoids as a therapeutic avenue (PubMed)
• Oromucosal delta9-tetrahydrocannabinol/cannabidiol for neuropathic pain associated with multiple sclerosis: an uncontrolled, open-label, 2-year extension trial (PubMed)
• The non-psychoactive cannabis constituent cannabidiol is an orally effective therapeutic agent in rat chronic inflammatory and neuropathic pain (PubMed)
• Vanilloid TRPV1 receptor mediates the antihyperalgesic effect of the nonpsychoactive cannabinoid, cannabidiol, in a rat model of acute inflammation (PubMed)
• Cannabidiol inhibits paclitaxel-induced neuropathic pain through 5-HT1A receptors without diminishing nervous system function or chemotherapy efficacy (PubMed)
• Antihyperalgesic effect of a Cannabis sativa extract in a rat model of neuropathic pain: Mechanisms involved (PubMed)
• Non-psychoactive cannabinoids modulate the descending pathway of antinociception in anaesthetized rats through several mechanisms of action (PubMed)
• Cannabinoids suppress inflammatory and neuropathic pain by targeting α3 glycine receptors (PubMed)
• Role of the cannabinoid system in pain control and therapeutic implications for the management of acute and chronic pain episodes (PubMed)
• Cannabinoids in the management of difficult to treat pain (PubMed)
• Multicenter, double-blind, randomized, placebo-controlled, parallel-group study of the efficacy, safety, and tolerability of THC:CBD extract and THC extract in patients with intractable cancer-related pain (PubMed)
• Marijuana extract helps prevent chemo pain (UPI)
• Pot users less likely to take painkillers (American News Report)

OBESITY
• The impact of marijuana use on glucose, insulin, and insulin resistance among US adults (PubMed)
• Cannabinol and cannabidiol exert opposing effects on rat feeding patterns (PubMed)
• Cannabis and Δ9-tetrahydrocannabinol (THC) for weight loss? (PubMed)
• The endocannabinoid system in obesity and type 2 diabetes (PubMed)
• Role of the endocannabinoid system in abdominal obesity and the implications for cardiovascular risk (PubMed)
• Cannabinoids and endocannabinoids in metabolic disorders with focus on diabetes (PubMed)
OBSESSIVE COMPULSIVE DISORDER (OCD)

- Plasma and brain pharmacokinetic profile of cannabidiol (CBD), cannabidivarin (CBDV), Δ⁹-tetrahydrocannabivarin (THCV) and cannabigerol (CBG) in rats and mice following oral and intraperitoneal administration and CBD action on obsessive-compulsive behaviour (PubMed)

OSTEOPOROSIS

- Cannabinoid receptors as target for treatment of osteoporosis: A tale of two therapies (PubMed)
- Cannabinoids and bone: Friend or foe? (PubMed)
- Cannabinoid receptor type 1 protects against age-related osteoporosis by regulating osteoblast and adipocyte differentiation in marrow stromal cells (PubMed)
- Cannabinoids and the skeleton: From marijuana to reversal of bone loss (PubMed)
- The endovanilloid/endocannabinoid system: A new potential target for osteoporosis therapy (PubMed)
- The endovanilloid/endocannabinoid system in human osteoclasts: Possible involvement in bone formation and resorption (PubMed)
- Endocannabinoids and the regulation of bone metabolism (PubMed)
- Cannabinoid receptors and the regulation of bone mass (PubMed)
- Natural products as alternative treatments for metabolic bone disorders and for maintenance of bone health (PubMed)
- Peripheral cannabinoid receptor, CB2, regulates bone mass (PubMed)
- Regulation of bone mass, bone loss and osteoclast activity by cannabinoid receptors (PubMed)
- Long-chain polyunsaturated fatty acids may mutually benefit both obesity and osteoporosis (PubMed)
- Skeletal lipidomics: Regulation of bone metabolism by fatty acid amide family (PubMed)

PARKINSON'S DISEASE

- Prospects for cannabinoid therapies in basal ganglia disorders (PubMed)
- Evaluation of the neuroprotective effect of cannabinoids in a rat model of Parkinson's disease: Importance of antioxidant and cannabinoid receptor-independent properties (PubMed)
- Cannabinoids provide neuroprotection against 6-hydroxydopamine toxicity in vivo and in vitro: relevance to Parkinson's disease (PubMed)
- Cannabidiol can improve complex sleep-related behaviours associated with rapid eye movementsleep behaviour disorder in Parkinson's disease patients: a case series (PubMed)
- Cannabidiol for the treatment of psychosis in Parkinson's disease (PubMed)
- Symptom-relieving and neuroprotective effects of the phytocannabinoid Δ⁹-THCV in animal models of Parkinson's disease (PubMed)
- Therapeutic potential of cannabinoids in CNS disease (PubMed)

PRION/MAD COW DISEASE (MCD)

- Nonpsychoactive cannabidiol prevents prion accumulation and protects neurons against prion toxicity (PubMed)
- Cannabidiol: A prion therapy for mice? (PubMed)

POST TRAUMATIC STRESS DISORDER (PTSD)

- The endocannabinoid system provides an avenue for evidence-based treatment development for PTSD (PubMed)
- Reductions in circulating endocannabinoid levels in individuals with post-traumatic stress disorder following exposure to the world trade center attacks (PubMed)
- Enhancing cannabinoid neurotransmission augments the extinction of conditioned fear (PubMed)
- Cannabidiol blocks long-lasting behavioral consequences of predator threat stress: Possible involvement of 5HT1A receptors (PubMed)
• Stress switches cannabinoid type-1 (CB1) receptor-dependent plasticity from LTD to LTP in the bed nucleus of the stria terminalis (PubMed)

• Mitigation of post-traumatic stress symptoms by Cannabis resin: A review of the clinical and neurobiological evidence (PubMed)

• Cannabinoid modulation of fear extinction brain circuits: A novel target to advance anxiety treatment (PubMed)

• The endocannabinoid system and extinction learning (PubMed)

• A current overview of cannabinoids and glucocorticoids in facilitating extinction of aversive memories: potential extinction enhancers (PubMed)

• Cannabinoids and traumatic stress modulation of contextual fear extinction and GR expression in the amygdala-hippocampal-prefrontal circuit (PubMed)

• Non-antidepressant long-term treatment in post-traumatic stress disorder (PubMed)

• The anxiolytic effect of cannabidiol on chronically stressed mice depends on hippocampal neurogenesis: Involvement of the endocannabinoid system (PubMed)

• Modulation of Fear Memory by Dietary Polyunsaturated Fatty Acids via Cannabinoid Receptors (PubMed)

RHEUMATISM

• Cannabidiol as an emergent therapeutic strategy for lessening the impact of inflammation on oxidative stress (PubMed)

SCHIZOPHRENIA

• Cannabidiol, a Cannabis sativa constituent, as an antipsychotic drug (PubMed)

• Cannabidiol as a potential treatment for psychosis (PubMed)

• Cannabidiol enhances anandamide signaling and alleviates psychotic symptoms of schizophrenia (PubMed)

• Medical use of cannabis. Cannabidiol: A new light for schizophrenia? (PubMed)

• A critical review of the antipsychotic effects of cannabidiol: 30 years of a translational investigation (PubMed)

• Peripheral endocannabinoid system dysregulation in first-episode psychosis (PubMed)

• Cannabinoids and schizophrenia: Therapeutic prospects (PubMed)

• Antipsychotic-like effects of cannabidiol and rimonabant: Systematic review of animal and human studies (PubMed)

• Cannabidiol monotherapy for treatment-resistant schizophrenia (PubMed)

• Marijuana with high cannabidiol content is associated with fewer psychotic experiences (PubMed)

• Clearing the smoke: what do we know about adolescent cannabis use and schizophrenia? (PubMed)

SICKLE CELL ANEMIA

• Pain-related behaviors and neurochemical alterations in mice expressing sickle hemoglobin: Modulation by cannabinoids (Pub Med)

• Cannabis use in sickle cell disease: A questionnaire study (Pub Med)

SKIN CONDITIONS

• Cannabinoids inhibit human keratinocyte proliferation through a non-CB1/CB2 mechanism and have a potential therapeutic value in the treatment of psoriasis (PubMed)

• Cannabidiol exerts sebostatic and anti-inflammatory effects on human sebocytes (PubMed)

• The endocannabinoid system of the skin in health and disease: Novel perspectives and therapeutic opportunities (PubMed)

• Epigenetic control of skin differentiation genes by phytocannabinoids (PubMed)

Cannabinoids modulate human epidermal keratinocyte proliferation and survival via the sequential engagement of cannabinoid receptor-1 and transient receptor potential vanilloid-1 (PubMed)

Cannabinoid 1 receptors in keratinocytes modulate proinflammatory chemokine secretion and attenuate contact allergic inflammation (PubMed)

Attenuation of allergic contact dermatitis through the endocannabinoid system (PubMed)

Topical cannabinoid agonists. An effective new possibility for treating chronic pruritus (PubMed)

SLEEP DISORDERS

The nonpsychoactive Cannabis constituent cannabidiol is a wake-inducing agent (PubMed)

Cannabis, pain, and sleep: Lessons from therapeutic clinical trials of Sativex, a cannabis-based medicine (PubMed)

Effects of acute systemic administration of cannabidiol on sleep-wake cycle in rats (PubMed)

Effect of Delta-9-tetrahydrocannabinol and cannabidiol on nocturnal sleep and early-morning behavior in young adults (PubMed)

Cannabidiol, a constituent of Cannabis sativa, modulates sleep in rats (PubMed)

Endocannabinoid modulation of cortical up-states and NREM sleep (PubMed)

Intranodose ganglion injections of dronabinol attenuate serotonin-induced apnea in Sprague-Dawley rat (PubMed)

SPINAL CORD INJURY

Cannabidiol-treated rats exhibited higher motor score after cryogenic spinal cord injury (PubMed)

STRESS

Endogenous cannabinoid signaling is essential for stress adaptation (PubMed)

Regulation of endocannabinoid signaling by stress: Implications for stress-related affective disorders (PubMed)

Functional interactions between stress and the endocannabinoid system: from synaptic signaling to behavioral output (PubMed)

Neuromodulators, stress and plasticity: a role for endocannabinoid signalling (PubMed)

Downregulation of endocannabinoid signaling in the hippocampus following chronic unpredictable stress (PubMed)

Endocannabinoids and stress (PubMed)

Stress regulates endocannabinoid-CB1 receptor signaling (PubMed)

Endocannabinoid-mediated modulation of stress responses: Physiological and pathophysiological significance (PubMed)

Cannabinoid receptor activation prevents the effects of chronic mild stress on emotional learning and LTP in a rat model of depression (PubMed)

Cannabinoids ameliorate impairments induced by chronic stress to synaptic plasticity and short-term memory (PubMed)

The anxiolytic effect of cannabidiol on chronically stressed mice depends on hippocampal neurogenesis: involvement of the endocannabinoid system (PubMed)

STROKE/TRAUMATIC BRAIN INJURY (TBI)

Cannabidiol, a nonpsychoactive Cannabis constituent, protects against myocardial ischemic reperfusion injury (PubMed)

Cannabidiol prevents infarction via the non-CB1 cannabinoid receptor mechanism (PubMed)
• Cannabidiol prevents cerebral infarction via a serotonergic 5-hydroxytryptamine1A receptor-dependent mechanism (PubMed)
• Protective Effects of Cannabidiol Against Hippocampal Cell Death and Cognitive Impairment Induced by Bilateral Common Carotid Artery Occlusion in Mice (PubMed)
• Repeated treatment with cannabidiol but not Delta9-tetrahydrocannabinol has a neuroprotective effect without the development of tolerance (PubMed)