

Granny Storm Crow's List - July 2014

THE SYNTHETICS

ABN-CBD/ ABNORMAL CANNABIDIOL/ CAY10429* - GPR-18 agonist? GPR-55 agonist?

Vasodilator actions of abnormal-cannabidiol in rat isolated small mesenteric artery
(full - 2003) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1573773/?tool=pmcentrez>

Selective ligands and cellular effectors of a G protein-coupled endothelial cannabinoid receptor. (full – 2003) <http://mol pharm.aspetjournals.org/content/63/3/699.long>

2-Arachidonylglycerol ether and abnormal cannabidiol-induced vascular smooth muscle relaxation in rabbit pulmonary arteries via receptor-pertussis toxin sensitive G proteins-ERK1/2 signaling. (abst – 2007) <http://www.ncbi.nlm.nih.gov/pubmed/17292352>

Identification of the vasodilatory endothelial cannabinoid receptor in the human pulmonary artery. (abst – 2007) <http://www.ncbi.nlm.nih.gov/pubmed/17921818>

Inhibition of human neutrophil chemotaxis by endogenous cannabinoids and phytocannabinoids: evidence for a site distinct from CB1 and CB2. (full – 2008)
<http://mol pharm.aspetjournals.org/content/73/2/441.long>

International Union of Basic and Clinical Pharmacology. LXXIX. Cannabinoid Receptors and Their Ligands: Beyond CB1 and CB2 (full – 2010)
<http://pharmrev.aspetjournals.org/content/62/4/588.full.pdf+html>

N-arachidonoyl glycine, an abundant endogenous lipid, potently drives directed cellular migration through GPR18, the putative abnormal cannabidiol receptor (full – 2010)
<http://www.biomedcentral.com/1471-2202/11/44>

Nonpsychotropic Cannabinoids, Abnormal Cannabidiol and Canabigerol-Dimethyl Heptyl, Act at Novel Cannabinoid Receptors to Reduce Intraocular Pressure.
(abst – 2011) <http://www.ncbi.nlm.nih.gov/pubmed/21770780>

The abnormal cannabidiol analogue O-1602 reduces nociception in a rat model of acute arthritis via the putative cannabinoid receptor GPR55. (abst – 2011)
<http://www.ncbi.nlm.nih.gov/pubmed/21683763>

siRNA knockdown of GPR18 receptors in BV-2 microglia attenuates N-arachidonoyl glycine-induced cell migration (full – 2012)
<http://www.jmolecularsignaling.com/content/7/1/10>

GPR18 in microglia: implications for the CNS and endocannabinoid system signaling
(full – 2012) <http://onlinelibrary.wiley.com/doi/10.1111/j.1476-5381.2012.02019.x/full>

Involvement of a non-CB1/CB2 cannabinoid receptor in the aqueous humor outflow-enhancing effects of abnormal-cannabidiol. (abst – 2012)

<http://www.ncbi.nlm.nih.gov/pubmed/22580290>

A GPR18-based signaling system regulates IOP in murine eye. (full – 2013)

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3687663/>

Mechanism of Central Atypical Cannabinoid Receptor GPR18-Mediated Hypotension in Conscious Rats (abst – 2013)

http://www.fasebj.org/cgi/content/meeting_abstract/27/1_MeetingAbstracts/654.15?sid=eea722c0-971c-4daa-8b8c-38c0c63c19ad

Role of Central Atypical Cannabinoid Receptor GPR18 in Modulating Cardiovascular Function (abst – 2013)

http://www.fasebj.org/cgi/content/meeting_abstract/26/1_MeetingAbstracts/663.10?sid=eea722c0-971c-4daa-8b8c-38c0c63c19ad

Evaluation of the insulin releasing and antihyperglycaemic activities of GPR55 lipid agonists using clonal beta-cells, isolated pancreatic islets and mice. (abst – 2013)

<http://www.ncbi.nlm.nih.gov/pubmed/23992544>

Cannabinoid Effects on β Amyloid Fibril and Aggregate Formation, Neuronal and Microglial-Activated Neurotoxicity In Vitro (abst – 2013)

<http://www.ncbi.nlm.nih.gov/pubmed/24030360>

Neuronal Nitric Oxide Synthase Dependent Elevation in Adiponectin in the Rostral Ventrolateral Medulla Underlies GPR18-mediated Hypotension in Conscious Rats. (full – 2014) <http://jpet.aspetjournals.org/content/early/2014/08/06/jpet.114.216036.long>

The Novel Endocannabinoid Receptor GPR18 is Expressed in the Rostral Ventrolateral Medulla and Exerts Tonic Restraining Influence on Blood Pressure. (full – 2014) <http://jpet.aspetjournals.org/content/early/2014/01/15/jpet.113.209213.long>

Vascular targets for cannabinoids: animal and human studies. (full – 2014)

<http://onlinelibrary.wiley.com/doi/10.1111/bph.12560/full>

Cannabinoid and lipid-mediated vasorelaxation in retinal microvasculature.

(abst – 2014) <http://www.ncbi.nlm.nih.gov/pubmed/24751709>

Activation of GPR18 by Cannabinoid compounds: A tale of biased agonism.

(abst – 2014) <http://www.ncbi.nlm.nih.gov/pubmed/24762058>

ACEA/ ARACHIDONYL-2'-CHLOROETHYLAMIDE - CB1 agonist

Synthesis and characterization of potent and selective agonists of the neuronal cannabinoid receptor (CB1) (full – 1999)
<http://jpet.aspetjournals.org/content/289/3/1427.long>

Protective effects of cannabinoid receptor ligands analogous to anandamide against cocaine toxicity. (abst – 2001) <http://www.ncbi.nlm.nih.gov/pubmed/11828716>

The cannabinoids R(-)-7-hydroxy-delta-6-tetra-hydrocannabinol-dimethylheptyl (HU-210), 2-O-arachidonoylglycercylether (HU-310) and arachidonyl-2-chloroethylamide (ACEA) increase isoflurane provoked sleep duration by activation of cannabinoids 1 (CB1)-receptors in mice. (abst – 2002) <http://www.ncbi.nlm.nih.gov/pubmed/12095655>

In vivo effects of CB1 receptor ligands on lipid peroxidation and antioxidant defense systems in the rat brain of healthy and ethanol-treated rats. (full – 2006)
http://www.if-pan.krakow.pl/pjp/pdf/2006/6_876.pdf

Differential effect of cannabinoid agonists and endocannabinoids on histamine release from distinct regions of the rat brain. (full – 2006)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1769340/?tool=pubmed>

Arachidonyl-2'-chloroethylamide, a highly selective cannabinoid CB1 receptor agonist, enhances the anticonvulsant action of valproate in the mouse maximal electroshock-induced seizure model. (abst – 2006) <http://www.ncbi.nlm.nih.gov/pubmed/16930590>

Opposing control of cannabinoid receptor stimulation on amyloid-beta-induced reactive gliosis: in vitro and in vivo evidence. (full - 2007)
<http://jpet.aspetjournals.org/content/322/3/1144.long>

Ultra-low dose cannabinoid antagonist AM251 enhances cannabinoid anticonvulsant effects in the pentylenetetrazole-induced seizure in mice. (abst – 2007)
<http://www.ncbi.nlm.nih.gov/pubmed/17870135>

Attenuation of Experimental Autoimmune Hepatitis by Exogenous and Endogenous Cannabinoids: Involvement of Regulatory T Cells (full - 2008)
<http://molpharm.aspetjournals.org/content/74/1/20.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=320&resourcetype=HWCIT#content-block>

Cannabinoid modulation of cutaneous Adelta nociceptors during inflammation. (full – 2008) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2585399/?tool=pubmed>

Cannabinoid-mediated antinociception is enhanced in rat osteoarthritic knees. (full – 2008) <http://onlinelibrary.wiley.com/doi/10.1002/art.23156/full>

Endocannabinoids enhance lipid synthesis and apoptosis of human sebocytes via cannabinoid receptor-2-mediated signaling. (full – 2008)
<http://www.fasebj.org/content/22/10/3685.long>

Cannabinoid receptor activation induces apoptosis through tumor necrosis factor alpha-mediated ceramide de novo synthesis in colon cancer cells. (full – 2008)
<http://clincancerres.aacrjournals.org/content/14/23/7691.long>

Additive Interaction of the Cannabinoid Receptor I Agonist Arachidonyl-2-chloroethylamide with Etomidate in a Sedation Model in Mice (full – 2008)
http://journals.lww.com/anesthesiology/Fulltext/2008/04000/Additive_Interaction_of_the_Cannabinoid_Receptor_I.19.aspx

Peripheral cannabinoid CB1 receptors inhibit evoked responses of nociceptive neurones in vivo (abst – 2008) <http://www.sciencedirect.com/science/article/pii/S0014299908002719>

Endocannabinoid and serotonergic systems are needed for acetaminophen-induced analgesia. (abst – 2008)
<http://www.ncbi.nlm.nih.gov/pubmed/18485596?dopt=Abstract&holding=f1000,f1000m,isrctn>

Endogenous cannabinoids induce fever through the activation of CB1 receptors. (full – 2009) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2765314/?tool=pubmed>

The effects of intracerebroventricular AM-251, a CB1-receptor antagonist, and ACEA, a CB1-receptor agonist, on penicillin-induced epileptiform activity in rats. (full – 2009)
<http://onlinelibrary.wiley.com/doi/10.1111/j.1528-1167.2009.02098.x/full>

Involvement of nitrergic system in the anticonvulsant effect of the cannabinoid CB(1) agonist ACEA in the pentylenetetrazole-induced seizure in mice. (abst – 2009)
<http://www.ncbi.nlm.nih.gov/pubmed/19223154>

Involvement of nitric oxide in the gastroprotective effect of ACEA, a selective cannabinoid CB1 receptor agonist, on aspirin-induced gastric ulceration. (abst – 2009)
<http://www.ncbi.nlm.nih.gov/pubmed/19827302>

Effect of arachidonyl-2'-chloroethylamide, a selective cannabinoid CB1 receptor agonist, on the protective action of the various antiepileptic drugs in the mouse maximal electroshock-induced seizure model. (abst – 2009)
<http://www.ncbi.nlm.nih.gov/pubmed/19751793>

Role of cannabinoid CB1 receptors on macronutrient selection and satiety in rats. (abst – 2009) <http://www.ncbi.nlm.nih.gov/pubmed/19150453>

Regulatory Role of Cannabinoid Receptor 1 in Stress-Induced Excitotoxicity and Neuroinflammation (full - 2010)
<http://www.nature.com/npp/journal/vaop/ncurrent/full/npp2010214a.html>

Alkamides and a neolignan from Echinacea purpurea roots and the interaction of alkamides with G-protein-coupled cannabinoid receptors. (abst – 2011)
<http://www.ncbi.nlm.nih.gov/pubmed/21764086>

The Effect of Hypoxia on G Protein Coupled (CB1) Receptor Gene Expression in Cortical B50 Neurons in Culture (abst – 2011)
<http://www.maxwellsci.com/jp/abstract.php?id=BJPT&no=92&abs=05>

Inhibition of basal and ultraviolet B-induced melanogenesis by cannabinoid CB(1) receptors: a keratinocyte-dependent effect. (abst – 2011)
<http://www.ncbi.nlm.nih.gov/pubmed/21298280>

L-Type Calcium Channel Mediates Anticonvulsant Effect of Cannabinoids in Acute and Chronic Murine Models of Seizure. (abst – 2011)
<http://www.ncbi.nlm.nih.gov/pubmed/21928146>

Changes in the cannabinoid (CB1) receptor expression level and G-protein activation in kainic acid induced seizures. (abst – 2011) <http://www.ncbi.nlm.nih.gov/pubmed/22079489>

Opposing Roles for Cannabinoid Receptor Type-1 (CB(1)) and Transient Receptor Potential Vanilloid Type-1 Channel (TRPV1) on the Modulation of Panic-Like Responses in Rats. (full – 2012) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3242309/>

Cannabinoid Receptors CB1 and CB2 Form Functional Heteromers in Brain. (full – 2012) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3375509/>

Contrasting effects of different cannabinoid receptor ligands on mouse ingestive behavior (abst – 2012)
http://www.unboundmedicine.com/medline/ebm/record/22772336/abstract/Contrasting_effects_of_different_cannabinoid_receptor_ligands_on_mouse_ingestive_behaviour

CB1 Agonist ACEA Protects Neurons and Reduces the Cognitive Impairment of A β PP/PS1 Mice. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22451318>

Protective effect of cannabinoid CB1 receptor activation against altered intrinsic repetitive firing properties induced by A β neurotoxicity. (abst – 2012)
<http://www.ncbi.nlm.nih.gov/pubmed/22172925>

CB1 cannabinoid receptor activation rescues amyloid β -induced alterations in behaviour and intrinsic electrophysiological properties of rat hippocampal CA1 pyramidal neurones. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22508047>

Contrasting protective effects of cannabinoids against oxidative stress and amyloid- β evoked neurotoxicity in vitro. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22233683>

Cannabinoids and muscular pain. Effectiveness of the local administration in rat. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22354705>

Revisiting CB1 Receptor as Drug Target in Human Melanoma. (abst – 2012)
<http://www.ncbi.nlm.nih.gov/pubmed/22447182>

Photoperiodic Changes in Endocannabinoid Levels and Energetic Responses to Altered Signalling at CB1 Receptors in Siberian Hamsters (abst – 2012)
<http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2826.2012.02312.x/abstract>

Effect of ACEA-a selective cannabinoid CB1 receptor agonist on the protective action of different antiepileptic drugs in the mouse pentylenetetrazole-induced seizure model. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22789660>

Evaluation of Anti-invasion Effect of Cannabinoids on Human Hepatocarcinoma Cells. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22978792>

Distribution and function of the endocannabinoid system in the rat and human bladder. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/23081739>

Study: Cannabis Agonists Produce Anti-Cancer Effects In Human Liver Cancer Cells (news – 2012)
<http://norml.org/news/2012/10/11/study-cannabis-agonists-produce-anti-cancer-effects-in-human-liver-cancer-cells>

Anti-Cancer Effects In Human Liver Cancer Cells Produced By Cannabis Agonists (news – 2012) <http://www.imarijuana.com/tag/cannabinoid-agonists>

Type-1 (CB(1)) Cannabinoid Receptor Promotes Neuronal Differentiation and Maturation of Neural Stem Cells. (full – 2013)
<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0054271>

Role of endogenous cannabinoid system in the gut. (full - 2013)
<http://www.actaps.com.cn/qikan/manage/wenzhang/2013-4-12.pdf>

Cannabinoid modulation of chronic mild stress-induced selective enhancement of trace fear conditioning in adolescent rats. (full – 2013)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3883309/>

Chronic activation of cannabinoid receptors in vitro does not compromise mouse islet function. (full – 2013) <http://www.clinsci.org/cs/124/0467/1240467.pdf>

A novel control of human keratin expression: cannabinoid receptor 1-mediated signaling down-regulates the expression of keratins K6 and K16 in human keratinocytes in vitro and in situ. (full – 2013) <https://peerj.com/articles/40/>

Evaluation of anti-invasion effect of cannabinoids on human hepatocarcinoma cells. (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/22978792>

Role of cannabinoid and vanilloid receptors in invasion of human breast carcinoma cells (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23394450>

Characterisation of cannabinoid-induced relief of neuropathic pain in a rat model of cisplatin-induced neuropathy. (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23454533>

Cannabinoid receptor 1 controls human mucosal-type mast cell degranulation and maturation in situ. (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23453134>

The Role of CB1-Receptors in the Proconvulsant Effect of Leptin on Penicillin-Induced Epileptiform Activity in Rats. (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23521910>

Cannabinoids increase type 1 cannabinoid receptor expression in a cell culture model of striatal neurons: implications for Huntington's disease. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/23602984>

The role of α_2 -adrenoceptors in the anti-convulsant effects of cannabinoids on pentylenetetrazole-induced seizure threshold in mice. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/23756131>

CB1 Cannabinoid Receptor Agonist Prevents NGF-Induced Sensitization of TRPV1 in Sensory Neurons. (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23850608>

CB1 cannabinoid receptor-mediated aggressive behavior. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/23916480>

Pharmacology of Cannabinoid Receptor Agonists and a Cyclooxygenase-2 Inhibitor in Rat Bone Tumor Pain. (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/24008428>

Cannabinoid Effects on β Amyloid Fibril and Aggregate Formation, Neuronal and Microglial-Activated Neurotoxicity In Vitro (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/24030360>

Cannabinoid-induced autophagy regulates suppressor of cytokine signaling (SOCS)-3 in intestinal epithelium. (full – 2014) <http://ajpgi.physiology.org/content/307/2/G140>

Effects of cannabinoid drugs on the deficit of prepulse inhibition of startle in an animal model of schizophrenia: the SHR strain. (full – 2014)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3915876/>

Evaluation of selective cannabinoid CB1 and CB2 receptor agonists in a mouse model of lipopolysaccharide-induced interstitial cystitis. (abst – 2014)
<http://www.ncbi.nlm.nih.gov/pubmed/24561047>

The endocannabinoid 2-AG controls skeletal muscle cell differentiation via CB1 receptor-dependent inhibition of Kv7 channels. (abst – 2014)
<http://www.ncbi.nlm.nih.gov/pubmed/24927567>

Ultralow doses of cannabinoid drugs protect the mouse brain from inflammation-induced cognitive damage (abst – 2014) <http://onlinelibrary.wiley.com/doi/10.1002/jnr.23452/abstract>

Activation of CB1 inhibits NGF-induced sensitization of TRPV1 in adult mouse afferent neurons. (abst – 2014) <http://www.ncbi.nlm.nih.gov/pubmed/25088915>

ACPA/ ARACHIDONYLCYCLOPROPYLAMIDE – a potent CB1 agonist

Protective effects of cannabinoid receptor ligands analogous to anandamide against cocaine toxicity. (abst – 2001) <http://www.ncbi.nlm.nih.gov/pubmed/11828716>

Arachidonylcyclopropylamide increases microglial cell migration through cannabinoid CB2 and abnormal-cannabidiol-sensitive receptors. (abst – 2003)
<http://www.ncbi.nlm.nih.gov/pubmed/12921861>

The preventive effect of cannabinoids on reperfusion-induced ischemia of mouse kidney. (abst - 2008) <http://www.ncbi.nlm.nih.gov/pubmed/18571910>

Effects of Cannabinoids on Caffeine Contractures in Slow and Fast Skeletal Muscle Fibers of the Frog (full - 2009)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2697372/?tool=pmcentrez>

Anxiolytic-like effect induced by the cannabinoid CB1 receptor agonist, arachidonilcyclopropylamide (ACPA), in the rat amygdala is mediated through the D1 and D2 dopaminergic systems. (abst – 2011)
<http://www.ncbi.nlm.nih.gov/pubmed/20685770>

Effects of gonadal hormones on the peripheral cannabinoid receptor 1 (CB1R) system under a myositis condition in rats. (full – 2012)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3578305/>

Endocannabinoids in the Brainstem Modulate Dural Trigeminovascular Nociceptive Traffic via CB1 and "Triptan" Receptors: Implications in Migraine. (full – 2013)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3771033/>

Cannabinoids inhibit energetic metabolism and induce AMPK-dependent autophagy in pancreatic cancer cells. (full – 2013)
<http://www.nature.com/cddis/journal/v4/n6/pdf/cddis2013151a.pdf>

Comparative proteomic and phosphoproteomic profiling of pancreatic adenocarcinoma cells treated with CB1 or CB2 agonists. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/23463621>

Cannabinoids as therapeutic agents in cancer: current status and future implications. (link to PDF- 2014)
[http://www.impactjournals.com/oncotarget/index.php?journal=oncotarget&page=article&op=view&path\[\]_2233](http://www.impactjournals.com/oncotarget/index.php?journal=oncotarget&page=article&op=view&path[]_2233)

Effects of cannabinoids on tension induced by acetylcholine and choline in slow skeletal muscle fibers of the frog. (abst – 2014) <http://www.ncbi.nlm.nih.gov/pubmed/24218022>

Cannabinoid receptor type 1 activation by arachidonylcyclopropylamide in rat aortic rings causes vasorelaxation involving calcium-activated potassium channel subunit alpha-1 and calcium channel, voltage-dependent, L type, alpha 1C subunit. (abst – 2014)
<http://www.ncbi.nlm.nih.gov/pubmed/24561046>

AJULEMIC ACID/ AjA/ IP-751/ HU-239/ CT-3 - analog of Δ8-THC-11-oic acid, mechanism of action not established, also see JBT- 101

The Role of Cannabis and Cannabinoids in Pain Management (full – 2002)
http://www.humanhemphealth.ca/Russo-AAPM_chapter.pdf

Marijuana-Derived Compound Targets Pain, Inflammation (news - 2002)
<http://www.sciencedaily.com/releases/2002/08/020822071026.htm>

Analgesic effect of the synthetic cannabinoid CT-3 on chronic neuropathic pain: a randomized controlled trial. (full - 2003)
<http://jama.ama-assn.org/cgi/content/full/290/13/1757?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabis&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT>

Ajulemic acid: A novel cannabinoid produces analgesia without a “high” (abst - 2004)
<http://www.ncbi.nlm.nih.gov/pubmed/15240185?dopt=Abstract>

Ajulemic acid (IP-751): Synthesis, proof of principle, toxicity studies, and clinical trials (full - 2005) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2751505/?tool=pubmed>

Marijuana-Derived Drug Suppresses Bladder Overactivity And Irritation In Animal Models (news - 2005)
<http://www.sciencedaily.com/releases/2005/09/050906080225.htm>

Cannabimimetic Properties of Ajulemic Acid (full - 2006)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2633725/?tool=pmcentrez>

Marijuana-Derived Drug Suppresses Bladder Pain In Animal Models (news - 2006)
<http://www.sciencedaily.com/releases/2006/05/060521103039.htm>

Cannabimimetic Properties of Ajulemic Acid (full - 2007)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2633725/>

In humans, ajulemic acid has a more favorable side-effect profile than THC for the treatment of chronic neuropathic pain (full - 2007)
http://www.cannabis-med.org/english/journal/en_2007_01_1.pdf

Letter: Preclinical assessment of abuse liability of ajulemic acid (letter - 2007)
http://www.cannabis-med.org/english/journal/en_2007_01_2.pdf

Suppression of fibroblast metalloproteinases by ajulemic acid, a nonpsychoactive cannabinoid acid. (abst - 2007) <http://www.ncbi.nlm.nih.gov/pubmed/16927387>

Effects of IP-751, ajulemic acid, on bladder overactivity induced by bladder irritation in rats. (abst - 2007) <http://www.ncbi.nlm.nih.gov/pubmed/17656248>

Symptomatic treatment of multiple sclerosis using cannabinoids: recent advances. (abst - 2007) <http://www.ncbi.nlm.nih.gov/pubmed/17868014>

Cannabinoids in the management of difficult to treat pain (full - 2008)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2503660/?tool=pmcentrez>

Ajulemic acid, a nonpsychoactive cannabinoid acid, suppresses osteoclastogenesis in mononuclear precursor cells and induces apoptosis in mature osteoclast-like cells. (abst - 2008) <http://www.ncbi.nlm.nih.gov/pubmed/17786950>

Ajulemic acid, a synthetic cannabinoid acid, induces an antiinflammatory profile of eicosanoids in human synovial cells. (abst – 2008)
<http://www.ncbi.nlm.nih.gov/pubmed/18840450>

Suppression of human macrophage interleukin-6 by a nonpsychoactive cannabinoid acid. (abst - 2008) <http://www.ncbi.nlm.nih.gov/pubmed/18040689>

Cannabinoids, Endocannabinoids, and Related Analogs in Inflammation (full - 2009)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2664885/?tool=pmcentrez>

Cannabinoids as novel anti-inflammatory drugs. (full - 2009)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2828614/?tool=pubmed>

Ajulemic acid, a synthetic cannabinoid, increases formation of the endogenous proresolving and anti-inflammatory eicosanoid, lipoxin A4 (full - 2009)
<http://www.fasebj.org/cgi/content/full/23/5/1503?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabis&searchid=1&FIRSTINDEX=2400&resourcetype=HWCIT>

Synthetic cannabinoid ajulemic acid exerts potent antifibrotic effects in experimental models of systemic sclerosis. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22492781>

In vitro metabolism and metabolic effects of ajulemic acid, a synthetic cannabinoid agonist (full – 2013) <http://onlinelibrary.wiley.com/doi/10.1002/prp2.17/full>

In vitro metabolism and metabolic effects of ajulemic acid, a synthetic cannabinoid agonist (full – 2013) <http://onlinelibrary.wiley.com/doi/10.1002/prp2.17/full>

Control of spasticity in a multiple sclerosis model using central nervous system-excluded CB1 cannabinoid receptor agonists. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/24121462>

The cannabinoid acids, analogs and endogenous counterparts. (abst – 2014)

<http://www.ncbi.nlm.nih.gov/pubmed/24731541>

Inhibition of Voltage-Gated Na⁺ Channels by the Synthetic Cannabinoid Ajulemic Acid.
(abst – 2014) <http://www.ncbi.nlm.nih.gov/pubmed/24755846>

Ultrapure ajulemic acid has improved CB2 selectivity with reduced CB1 activity.
(abst – 2014) <http://www.ncbi.nlm.nih.gov/pubmed/24856183>

AM-111/ D-JNKI-1/ XG- 102 – blocks the MAPK-JNK signal pathway

AM-111 (news – undated) http://www.aurismedical.com/p/therapies/am_111.php?lg=en

A peptide inhibitor of c-Jun N-terminal kinase protects against both aminoglycoside and acoustic trauma-induced auditory hair cell death and hearing loss. (full – 2003)
<http://www.jneurosci.org/content/23/24/8596.long>

Cochlear implantation trauma and noise-induced hearing loss: Apoptosis and therapeutic strategies. (full - 2006) <http://onlinelibrary.wiley.com/doi/10.1002/ar.a.20305/pdf>

AM-111 reduces hearing loss in a guinea pig model of acute labyrinthitis. (abst – 2007)
<http://www.ncbi.nlm.nih.gov/pubmed/18322422>

Intratympanic treatment of acute acoustic trauma with a cell-permeable JNK ligand: a prospective randomized phase I/II study (abst – 2007)
<http://www.ncbi.nlm.nih.gov/pubmed/17712672>

AM-111 protects against permanent hearing loss from impulse noise trauma.
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Driving under the influence of synthetic cannabinoids ("Spice"): a case series.
(abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23636569>

Validation of a Novel Immunoassay for the Detection of Synthetic Cannabinoids and Metabolites in Urine Specimens. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/23625703>

K2 Toxicity: Fatal Case of Psychiatric Complications Following AM2201 Exposure.
(abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23822805>

Identification and Structural Elucidation of Four Cannabimimetic Compounds (RCS-4, AM-2201, JWH-203 and JWH-210) in Seized Products (abst – 2013)
<http://jat.oxfordjournals.org/content/37/2/56.abstract?sid=7be65428-0ff8-4917-884b-c35f5a2819af>

A Case of Cannabinoid Hyperemesis Syndrome Caused by Synthetic Cannabinoids.
(abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23890687>

Detection of Synthetic Cannabinoids in Oral Fluid Using ELISA and LC-MS-MS.
(abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23946452>

Toxicological Findings of Synthetic Cannabinoids in Recreational Users. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/23970540>

Blood Synthetic Cannabinoid Concentrations in Cases of Suspected Impaired Driving
(abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23965292>

Targeted Metabolomic Approach for Assessing Human Synthetic Cannabinoid Exposure and Pharmacology. (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23987522>

Prevalence of synthetic cannabinoids in blood samples from Norwegian drivers suspected of impaired driving during a seven weeks period. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/24129318>

Exogenous cannabinoids as substrates, inhibitors, and inducers of human drug metabolizing enzymes: a systematic review. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/24160757>

Detection of urinary metabolites of AM-2201 and UR-144, two novel synthetic cannabinoids. (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23042760>

Sulfaphenazole and α -Naphthoflavone Attenuate the Metabolism of the Synthetic Cannabinoids JWH-018 and AM2201 Found in K2/Spice. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/24329780>

Characteristics of the designer drug and synthetic cannabinoid receptor agonist AM-2201 regarding its chemistry and metabolism (abst – 2013)
<http://onlinelibrary.wiley.com/doi/10.1002/jms.3229/abstract>

Analysis of AM-2201 and metabolites in a drugs and driving case (abst – 2013)
<http://onlinelibrary.wiley.com/doi/10.1002/dta.1535/abstract>

Cytotoxicity of synthetic cannabinoids on primary neuronal cells of the forebrain: the involvement of cannabinoid CB1 receptors and apoptotic cell death (abst – 2013)
<http://www.sciencedirect.com/science/article/pii/S0041008X13004766>

Simultaneous quantification of 20 synthetic cannabinoids and 21 metabolites, and semi-quantification of 12 alkyl hydroxy metabolites in human urine by liquid chromatography-tandem mass spectrometry. (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/24418231>

Identification and quantification of synthetic cannabinoids in 'spice-like' herbal mixtures: A snapshot of the German situation in the autumn of 2012. (full – 2014)
<http://onlinelibrary.wiley.com/doi/10.1002/dta.1499/full>

Analysis of new classes of recreational drugs in sewage: Synthetic cannabinoids and amphetamine-like substances. (full – 2014)
<http://onlinelibrary.wiley.com/doi/10.1002/dta.1461/full>

Analysis of new classes of recreational drugs in sewage: Synthetic cannabinoids and amphetamine-like substances. (full – 2014)
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LC-QTOF-MS as a superior strategy to immunoassay for the comprehensive analysis of synthetic cannabinoids in urine. (abst – 2014)
<http://www.ncbi.nlm.nih.gov/pubmed/24424965>

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(abst – 2014) <http://www.ncbi.nlm.nih.gov/pubmed/23636569>

AM-2233 – CB1 agonist

F200A substitution in the third transmembrane helix of human cannabinoid CB1 receptor converts AM2233 from receptor agonist to inverse agonist. (abst – 2006)
<http://www.ncbi.nlm.nih.gov/pubmed/16438957>

Evaluation of the in vivo receptor occupancy for the behavioral effects of cannabinoids using a radiolabeled cannabinoid receptor agonist, R-[125/131I]AM2233.
(abst – 2006) <http://www.ncbi.nlm.nih.gov/pubmed/16715483>

Another nail in coffin of synthetic cannabis (news – 2011)
<http://tvnz.co.nz/national-news/another-nail-in-coffin-synthetic-cannabis-4666168?ref=rss>

Characteristics of the designer drug and synthetic cannabinoid receptor agonist AM-2201 regarding its chemistry and metabolism. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/23832945>

AM-3506 – blocks the break-down of Anandamide

Inhibitor of fatty acid amide hydrolase normalizes cardiovascular function in hypertension without adverse metabolic effects. (full – 2010)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3003779/>

Convergent translational evidence of a role for anandamide in amygdala-mediated fear extinction, threat processing and stress-reactivity (full – 2012)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3549323/>

Sulfonyl fluoride inhibitors of Fatty Acid amide hydrolase. (abst – 2012)
<http://www.ncbi.nlm.nih.gov/pubmed/23083016>

Acute reduction of anandamide-hydrolase (FAAH) activity is coupled with a reduction of nociceptive pathways facilitation in medication-overuse headache subjects after withdrawal treatment. (abst – 2012)
<http://www.ncbi.nlm.nih.gov/pubmed/22670561?dopt=Abstract>

Modulating the endocannabinoid system in human health and disease: successes and failures (full – 2013) <http://onlinelibrary.wiley.com/doi/10.1111/febs.12260/pdf>

Role of endogenous cannabinoid system in the gut. (full - 2013)
<http://www.actaps.com.cn/qikan/manage/wenzhang/2013-4-12.pdf>

2012 Division of Medicinal Chemistry Award Address: Trekking the Cannabinoid Road: A Personal Perspective. (full– 2014)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4064474/>

AM-4054 - CB1 agonist

Behavioral Profile of the Novel Cannabinoid Agonist AM4054 (thesis - 2006)
http://digitalcommons.uconn.edu/cgi/viewcontent.cgi?article=1016&context=srhonors_theses&sei-redir=1#search=%22am-4054%20%2Bcannabinoid%22

Effects of a Selective Cannabinoid Agonist and Antagonist on Body Temperature in Rats (abst - 2007)
http://www.fasebj.org/cgi/content/meeting_abstract/21/5/A409?maxtoshow=&hits=80&RESULTFORMAT=1&fulltext=cannabinoid&searchid=1&FIRSTINDEX=800&resourcetype=HWCIT

Diuretic effects of cannabinoids. (full – 2013)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3533417/>

Behavioral effects of the novel potent cannabinoid CB1 agonist AM 4054.
(full – 2013) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4015344/>

Effects of anandamide and other CB1 ligands on cognitive function (abst – 2013)
http://www.fasebj.org/cgi/content/meeting_abstract/27/1_MeetingAbstracts/1097.10?sid=eea722c0-971c-4daa-8b8c-38c0c63c19ad

Diuretic effects of cannabinoid agonists in mice. (abst – 2013)
<http://www.sciencedirect.com/science/article/pii/S0014299913007176>

Effects of a novel CB1 agonist on visual attention in male rats: Role of strategy and expectancy in task accuracy. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/24099361>

AM-4113 – CB1 antagonist

Effects of a Selective Cannabinoid Agonist and Antagonist on Body Temperature in Rats
(abst - 2007)
http://www.fasebj.org/cgi/content/meeting_abstract/21/5/A409?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=800&resourcetype=HWCIT

The neutral cannabinoid CB₁ receptor antagonist AM4113 regulates body weight through changes in energy intake in the rat. (full – 2011)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3023913/>

The CB(1) Receptor-Mediated Endocannabinoid Signaling and NGF: The Novel Targets of Curcumin. (turmeric) (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22311129>

2012 Division of Medicinal Chemistry Award Address: Trekking the Cannabinoid Road: A Personal Perspective. (full– 2014)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4064474/>

AM-6545 – peripherally restricted CB1 antagonist, no “high”

Rehashing endocannabinoid antagonists: can we selectively target the periphery to safely treat obesity and type 2 diabetes? (full – 2010)
[http://www.jci.org/articles/view/44099?search\[abstract_text\]=&search\[article_text\]=cannabinoid&search\[authors_text\]=&search\[fpage\]=&search\[title_text\]=&search\[volume\]](http://www.jci.org/articles/view/44099?search[abstract_text]=&search[article_text]=cannabinoid&search[authors_text]=&search[fpage]=&search[title_text]=&search[volume])

A novel peripherally restricted cannabinoid receptor antagonist, AM6545, reduces food intake and body weight, but does not cause malaise, in rodents (full – 2010)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2990160/>

The novel cannabinoid CB1 antagonist AM6545 suppresses food intake and food-reinforced behavior. (full – 2010) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3522179/>

Peripheral CB1 cannabinoid receptor blockade improves cardiometabolic risk in mouse models of obesity. (full – 2010) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2912197/>

Peripherally restricted CB1 receptor blockers. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/23902803>

2012 Division of Medicinal Chemistry Award Address: Trekking the Cannabinoid Road: A Personal Perspective. (full – 2014)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4064474/>

AM-6546 – CB1 antagonist

Endocannabinoid signaling in the gut mediates preference for dietary unsaturated fats. (full – 2013) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3659363/>

AM-6701 – equally blocks the break-down of 2-AG and anandamide

Equipotent Inhibition of Fatty Acid Amide Hydrolase and Monoacylglycerol Lipase - Dual Targets of the Endocannabinoid System to Protect against Seizure Pathology. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22270809>

AM-6702 - strongly blocks the break-down of anandamide, and, weakly, 2-AG

Equipotent Inhibition of Fatty Acid Amide Hydrolase and Monoacylglycerol Lipase - Dual Targets of the Endocannabinoid System to Protect against Seizure Pathology. (full – 2012) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3480564/>

AS-1535907 - GPR119 agonist

The role of small molecule GPR119 agonist, AS1535907, in glucose-stimulated insulin secretion and pancreatic β -cell function (abst – 2010)
<http://www.ncbi.nlm.nih.gov/pubmed/21114601>

Novel GPR119 agonist AS1535907 contributes to first-phase insulin secretion in rat perfused pancreas and diabetic db/db mice. (abst – 2010)
<http://www.ncbi.nlm.nih.gov/pubmed/20937249>

AS-1907417 - GPR119 agonist

AS1907417, a novel GPR119 agonist, as an insulinotropic and β -cell preservative agent for the treatment of type 2 diabetes. (abst – 2010)
<http://www.ncbi.nlm.nih.gov/pubmed/20816753>

CANNABINOR - CB2 agonist

Pharmos Initiates Phase I Trial of CB2-Selective Drug Candidate Cannabinor (news – 2005) <http://www.prnewswire.com/news-releases/pharmos-initiates-phase-i-trial-of-cb2-selective-drug-candidate-cannabinor-54718747.html>

Cannabinoid Receptor Agonist Significantly Reduces Post-Operative Pain, Study Says (news – 2007) http://norml.org/index.cfm?Group_ID=7246

Patent application title: Treatment Of Lower Urinary Tract Dysfunction With CB2-Receptor-Selective Agonists (full – 2009)
<http://www.faqs.org/patents/app/20090312414>

Cannabinor, a selective cannabinoid-2 receptor agonist, improves bladder emptying in rats with partial urethral obstruction. (full – 2010)
<http://www.jurology.com/article/S0022-5347%2810%2904713-0/fulltext>

Effects of cannabinor, a novel selective cannabinoid 2 receptor agonist, on bladder function in normal rats. (abst – 2010) <http://www.ncbi.nlm.nih.gov/pubmed/20207474>

3 CARBOXAMIDO-5-ARYL-ISOXAZOLES – CB 2 agonists

3-Carboxamido-5-aryl-isoxazoles as new CB2 agonists for the treatment of colitis.

(abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23849204>

Switching cannabinoid response from CB2 agonists to FAAH inhibitors. (abst – 2014)
<http://www.ncbi.nlm.nih.gov/pubmed/24508127>

CB-13 - CB1/CB2 dual agonist with limited brain penetration

Ligand Activation of Cannabinoid Receptors Attenuates Hypertrophy of Neonatal Rat Cardiomyocytes. (abst – 2014) <http://www.ncbi.nlm.nih.gov/pubmed/24979612>

Dual agonism of peripheral cannabinoid CB1/CB2 receptors suppresses cardiac myocyte hypertrophy (abst – 2014)
http://www.fasebj.org/content/28/1_Supplement/652.9.abstract?sid=db987fd0-3ef0-4796-aff6-4103f0c84daf

CB-65 - CB 2 agonist

The role of central CB2 cannabinoid receptors on food intake in neonatal chicks (abst – 2011) <http://www.ncbi.nlm.nih.gov/pubmed/21927979>

Evaluation of Anti-invasion Effect of Cannabinoids on Human Hepatocarcinoma Cells. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22978792>

Study: Cannabis Agonists Produce Anti-Cancer Effects In Human Liver Cancer Cells (news – 2012)
<http://norml.org/news/2012/10/11/study-cannabis-agonists-produce-anti-cancer-effects-in-human-liver-cancer-cells>

Anti-Cancer Effects In Human Liver Cancer Cells Produced By Cannabis Agonists (news – 2012) <http://www.imarijuana.com/tag/cannabinoid-agonists>

Role of cannabinoid and vanilloid receptors in invasion of human breast carcinoma cells (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23394450>

CESAMET – see NABILONE

COMPOUND A - CB1/2 agonist that is excluded from the brain

An Effective Prodrug Strategy to Selectively Enhance Ocular Exposure of a Cannabinoid Receptor (CB1/2) Agonist. (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/23738526>

CP-47,497 - CB1 & CB2 agonist

Cannabimimetic activity from CP-47,497, a derivative of 3-phenylcyclohexanol (abst - 1982)
<http://jpet.aspetjournals.org/content/223/2/516.abstract?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=Hexahydrocannabinol&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT>

The Conformational Properties of the Highly Selective Cannabinoid Receptor Ligand CP-55,940 (full - 1996)
<http://www.jbc.org/content/271/18/10640.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=Hexahydrocannabinol&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT>

Cannabinoids augment the release of neuropeptide Y in the rat hypothalamus (abst – 2005) <http://www.sciencedirect.com/science/article/pii/S0028390805001668>

Withdrawal Phenomena and Dependence Syndrome After the Consumption of "Spice Gold" (full - 2009) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2719097/?tool=pmcentrez>

Spice drugs: cannabinoids as a new designer drugs. (abst - 2009)
http://www.unboundmedicine.com/medline/ebm/record/19718488/abstract/%5BSpice_drugs:_cannabinoids_as_a_new_designer_drugs_%5D

Spice: a never ending story? (abst – 2009) <http://www.ncbi.nlm.nih.gov/pubmed/19589652>

Pharmacological properties and dependence liabilities of synthetic cannabinoids (abst – 2010)
http://www.unboundmedicine.com/medline/ebm/record/20681249/abstract/%5BPharmacological_properties_and_dependence_liabilities_of_synthetic_cannabinoids%5D

Monitoring of herbal mixtures potentially containing synthetic cannabinoids as psychoactive compounds. (abst – 2010) <http://www.ncbi.nlm.nih.gov/pubmed/20857386>

THIS ISN'T YOUR MOTHER'S SPICE (news - 2010)
<http://www.mapinc.org/drugnews/v10/n497/a07.html?1173>

Now, There's a Test for That -- Norchem's "Fake Marijuana" Test Reveals Significantly Increased Abuse of Spice/K2 (news - 2010)

<http://www.marketwire.com/press-release/Now-Theres-Test-That-Norchems-Fake-Marijuana-Test-Reveals-Significantly-Increased-Abuse-1356247.htm>

College students and use of K2: an emerging drug of abuse in young persons
(full – 2011) <http://www.substanceabusepolicy.com/content/6/1/16>

Marijuana-based Drugs: Innovative Therapeutics or Designer Drugs of Abuse?
(full – 2011) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3139381/?tool=pubmed>

Beyond THC: The New Generation of Cannabinoid Designer Drugs. (full – 2011)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3187647/?tool=pubmed>

Investigating a not-so-natural high. (full – 2011)
<http://pubs.acs.org/doi/full/10.1021/ac900564u>

CP47,497-C8 and JWH073, commonly found in 'Spice' herbal blends, are potent and efficacious CB(1) cannabinoid receptor agonists. (full – 2011)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3094488/>

Synthetic cannabinoids in oral fluid. (full – 2011)
<http://jat.oxfordjournals.org/content/35/7/424.long>

Use of high-resolution accurate mass spectrometry to detect reported and previously unreported cannabinomimetics in "herbal high" products. (full – 2011)
<http://jat.oxfordjournals.org/content/34/5/252.long>

A method for CP 47, 497 a synthetic non-traditional cannabinoid in human urine using liquid chromatography tandem mass spectrometry. (abst – 2011)
<http://www.ncbi.nlm.nih.gov/pubmed/21233028>

Cytotoxicity of synthetic cannabinoids found in "Spice" products: The role of cannabinoid receptors and the caspase cascade in the NG 108-15 cell line.
(abst – 2011) <http://www.ncbi.nlm.nih.gov/pubmed/21907772>

Effects of synthetic cannabinoids on electroencephalogram power spectra in rats.
(abst – 2011)
http://www.unboundmedicine.com/medline/ebm/record/21640532/abstract/Effects_of_synthetic_cannabinoids_on_electroencephalogram_power_spectra_in_rats

The emergence and analysis of synthetic cannabinoids. (abst – 2011)
<http://www.ncbi.nlm.nih.gov/pubmed/21337724>

Chemicals Used in "Spice" and "K2" Type Products Now Under Federal Control and Regulation (news – 2011) <http://www.justice.gov/dea/pubs/pressrel/pr030111.html>

Outlawing 'Legal Highs:' Can Emergency Bans Hinder Drug Development?
(news – 2011)
<http://healthland.time.com/2011/02/23/outlawing-legal-highs-can-emergency-bans-hinder-drug-development/>

Characterization of In Vitro Metabolites of CP 47,497, a Synthetic Cannabinoid, in Human Liver Microsomes by LC-MS/MS. (abst – 2012)
<http://www.ncbi.nlm.nih.gov/pubmed/22931239>

Detection and quantification of new designer drugs in human blood: part 1 - synthetic cannabinoids. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22593567>

The spice in France: mixed herbs containing synthetic cannabinoids. (abst – 2012)
<http://www.ncbi.nlm.nih.gov/pubmed/22796613>

Acute toxicity due to the confirmed consumption of synthetic cannabinoids: Clinical and laboratory findings. (abst – 2012) <http://www.ncbi.nlm.nih.gov/pubmed/22971158>

“Spiceophrenia”: a systematic overview of “Spice”-related psychopathological issues and a case report (full – 2013) <http://onlinelibrary.wiley.com/doi/10.1002/hup.2312/full>

The K2/Spice Phenomenon: emergence, identification, legislation and metabolic characterization of synthetic cannabinoids in herbal incense products. (full – 2013)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4100246/>

Getting up to speed with the public health and regulatory challenges posed by new psychoactive substances in the information age (editorial – 2013)
<http://onlinelibrary.wiley.com/doi/10.1111/add.12287/full>

Synthetic Cannabinoids -The Challenges of Testing for Designer Drugs (article – 2013) (funky link- delete the “sign in”, and it comes up)
<http://www.aacc.org/publications/cln/2013/february/Pages/Cannabinoids.aspx?PassThru=ok&PersonID=206339#>

Cytotoxicity of synthetic cannabinoids on primary neuronal cells of the forebrain: the involvement of cannabinoid CB1 receptors and apoptotic cell death. (abst – 2013)
<http://www.ncbi.nlm.nih.gov/pubmed/24211273>

Simultaneous quantification of 20 synthetic cannabinoids and 21 metabolites, and semi-quantification of 12 alkyl hydroxy metabolites in human urine by liquid chromatography-tandem mass spectrometry. (abst – 2013) <http://www.ncbi.nlm.nih.gov/pubmed/24418231>

Investigation of the in vitro toxicological properties of the synthetic cannabimimetic drug CP-47,497-C8. (abst – 2014) <http://www.ncbi.nlm.nih.gov/pubmed/24686252>

CP-50,556-1 / LEVONANTRADOL - CB1 & CB2 agonist

Clinical experience with levonantradol hydrochloride in the prevention of cancer chemotherapy-induced nausea and vomiting. (abst – 1981)
<http://www.ncbi.nlm.nih.gov/pubmed/7298877>

Randomised Clinical Trial of Levonantradol and Chlorpromazine in the Prevention of Radiotherapy-induced Vomiting. (abst - 1982)
<http://www.ncbi.nlm.nih.gov/pubmed/6754212>

Levonantradol, a new antiemetic with a high rate of side-effects for the prevention of nausea and vomiting in patients receiving cancer chemotherapy. (abst – 1982)
<http://www.ncbi.nlm.nih.gov/pubmed/7139853>

Respiratory and cardiovascular depressant effects of nabilone, N-methyllevonantradol and delta 9-tetrahydrocannabinol in anesthetized cats. (abst - 1983)
<http://jpet.aspetjournals.org/content/227/2/508.abstract?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=marihuana&searchid=1&FIRSTINDEX=1920&resourcetype=HWCIT>

Levonantradol: a synthetic cannabinoid in the treatment of severe chemotherapy-induced nausea and vomiting resistant to conventional anti-emetic therapy. (abst – 1983)
<http://www.ncbi.nlm.nih.gov/pubmed/6309451>

Antiemetic efficacy of levonantradol compared to delta-9-tetrahydrocannabinol for chemotherapy-induced nausea and vomiting. (abst – 1985)
<http://www.ncbi.nlm.nih.gov/pubmed/2981616>

Thujone exhibits low affinity for cannabinoid receptors but fails to evoke cannabimimetic responses. (abst – 1999) <http://www.ncbi.nlm.nih.gov/pubmed/10080239>

Behaviroal, pharmacological, and molecular characterization of an amphibian cannabinoid receptor. (full – 2000)
<http://onlinelibrary.wiley.com/doi/10.1046/j.1471-4159.2000.0750413.x/full>

Delta(9)-tetrahydrocannabinol and synthetic cannabinoids prevent emesis produced by the cannabinoid CB(1) receptor antagonist/inverse agonist SR 141716A. (full – 2001)
<http://www.nature.com/npp/journal/v24/n2/full/1395605a.html>

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Transdermal delivery of cannabidiol Patent 8435556 (full – 2013)
<https://www.google.com/patents/US8435556>

Levonantradol: asymmetric synthesis and structural analysis. (abst – 2013)
<http://pubs.rsc.org/en/Content/ArticleLanding/2013/CC/c3cc41388h>

CP-55,940 - CB1, CB2 & GPR-55 agonist

Molecular cloning of a human cannabinoid receptor which is also expressed in testis
(full – 1991) <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1151556/>

Cannabinoid receptor agonists inhibit Ca current in NG108-15 neuroblastoma cells via a pertussis toxin-sensitive mechanism. (full - 1992)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1907498/?tool=pmcentrez&page=1>

Cross-tolerance between delta-9-tetrahydrocannabinol and the cannabimimetic agents, WIN 55,212-2 and anandamide. (full - 1993)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2175863/?tool=pmcentrez&page=1>

Cannabinoids enhance human B-cell growth at low nanomolar concentrations.
(abst – 1995) <http://www.ncbi.nlm.nih.gov/pubmed/7544292>

AM630, a competitive cannabinoid receptor antagonist. (abst – 1995)
<http://www.ncbi.nlm.nih.gov/pubmed/7776818>

Involvement of Dynorphin B in the Antinociceptive Effects of the Cannabinoid CP55,940 in the Spinal Cord (full - 1997) <http://jpet.aspetjournals.org/content/281/2/730.full>

Cannabinoid Receptor Agonists Protect Cultured Rat Hippocampal Neurons from Excitotoxicity (full - 1998) <http://molpharm.aspetjournals.org/content/54/3/459.full>

Potent Effects of a Selective Cannabinoid Receptor Agonist on Some Guinea Pig Medial Vestibular Nucleus Neurons. (abst – 1998) <http://www.ncbi.nlm.nih.gov/pubmed/9650841>

The role of cannabinoid receptors in intestinal motility, defaecation and diarrhoea in rats (abst - 1999) <http://www.ncbi.nlm.nih.gov/pubmed/10611417>

Effects of cannabinoid receptor agonists on neuronally-evoked contractions of urinary bladder tissues isolated from rat, mouse, pig, dog, monkey and human (full - 2000)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1571997/?tool=pmcentrez>

Behaviroal, pharmacological, and molecular characterization of an amphibian cannabinoid receptor. (full – 2000)
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Protection from osteoarthritis may lie in our own joints, study suggests (news – 2014)
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The cannabinoids R(-)-7-hydroxy-delta-6-tetra-hydrocannabinol-dimethylheptyl (HU-210), 2-O-arachidonoylglycercylether (HU-310) and arachidonyl-2-chloroethylamide (ACEA) increase isoflurane provoked sleep duration by activation of cannabinoids 1 (CB1)-receptors in mice. (abst – 2002) <http://www.ncbi.nlm.nih.gov/pubmed/12095655>

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HU-320 identified as a novel synthetic cannabinoid with therapeutic activity in an experiment model of rheumatoid arthritis (news – 2004)
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HU-239- see Ajulemic Acid

HU-331 – derived from cannabidiol (CBD), mechanism of action not established

A cannabinoid quinone inhibits angiogenesis by targeting vascular endothelial cells.
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A Cannabinoid Anticancer Quinone, HU-331, Is More Potent and Less Cardiotoxic Than Doxorubicin: A Comparative in Vivo Study (full - 2007)
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Antitumorigenic Effects of Cannabinoids beyond Apoptosis (full - 2010)
<http://jpet.aspetjournals.org/content/332/2/336.full?sid=af53ea87-ab4b-426e-9c7e-8f750e9c4a17>

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(abst – 2014)
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Ultrapure ajulemic acid has improved CB2 selectivity with reduced CB1 activity. (abst – 2014) <http://www.ncbi.nlm.nih.gov/pubmed/24856183>

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<http://www.ncbi.nlm.nih.gov/pubmed/23902803>

JWH-015 – CB2 & GPR-55 agonist, mildly activates CB1 receptors

Effects of cannabinoid receptor agonists on neuronally-evoked contractions of urinary bladder tissues isolated from rat, mouse, pig, dog, monkey and human (full - 2000)
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1571997/?tool=pmcentrez>

Targeting CB2 cannabinoid receptors as a novel therapy to treat malignant lymphoblastic disease (full - 2002)
<http://bloodjournal.hematologylibrary.org/cgi/content/full/100/2/627?ijkey=eb71d6d7a06f311440761cfac6a7d081bcc2771d>

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(link to PDF– 2005) <http://www.springerlink.com/content/tq777102q4185073/fulltext.html>

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JZL-195 - stops the breakdown of anandamide and 2-AG

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