The Synthetic Cannabinoids

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The analgesic activity of paracetamol is prevented by the blockade of cannabinoid CB1 receptors (abst – 2005) http://www.sciencedirect.com/science/article/pii/S0014299905013178


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Δ9-Tetrahydrocannabinol (THC) and AM 404 protect against cerebral ischaemia in gerbils through a mechanism involving cannabinoid and opioid receptors (full - 2007)  
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Pharmacological elevation of anandamide impairs short-term memory by altering the neurophysiology in the hippocampus. (abst – 2011)  

The anandamide transport inhibitor AM404 reduces the rewarding effects of nicotine and nicotine-induced dopamine elevations in the nucleus accumbens shell in rats (abst – 2011)  
http://www.unboundmedicine.com/medline/ebm/record/21557729/abstract/The_anandamide_transport_inhibitor_AM404_reduces_the_rewarding_effects_of_nicotine_and_nicotine_induced_dopamine_elevations_in_the_nucleus_accumbens_shell_in_rats

Role of endocannabinoid and glutamatergic systems in DOI-induced head-twitch response in mice. (abst – 2011)  

Endocannabinoid analogues exacerbate marble-burying behavior in mice via TRPV1 receptor. (abst – 2012)  

Effects of the anandamide uptake blocker AM404 on food intake depend on feeding status and route of administration. (abst – 2012)  

Inhibition of fatty acid amide hydrolase by URB597 attenuates the anxiolytic-like effect of acetaminophen in the mouse elevated plus-maze test. (abst – 2012)  

Peripheral antinociceptive effect of anandamide and drugs that affect the endocannabinoid system on the formalin test in normal and streptozotocin-diabetic rats. (abst – 2012)  


AM-630 – CB2 antagonist


Inhibition of Inflammatory Hyperalgesia by Activation of Peripheral CB2 Cannabinoid Receptors (full – 2003) http://journals.lww.com/anesthesiology/Fulltext/2003/10000/Inhibition_of_Inflammatory_Hyperalgesia_by.31.aspx

Antinociceptive effect of cannabinoid agonist WIN 55,212–2 in rats with a spinal cord injury (full - 2006) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1861843/?tool=pmcentrez

Inhibition of Salivary Secretion by Activation of Cannabinoid Receptors (full - 2006) http://ebm.rsmjournals.com/cgi/content/full/231/8/1421?maxtoshows=80&RESULTFORMAT=fulltext=cannabinoid&searchid=1&FIRSTINDEX=880&resourcetype=HWCIT

The local antinociceptive effects of paracetamol in neuropathic pain are mediated by cannabinoid receptors (abst – 2007) http://www.sciencedirect.com/science/article/pii/S0014299907007935

Regulation of Bone Mass, Osteoclast Function, and Ovariectomy-Induced Bone Loss by the Type 2 Cannabinoid Receptor (full - 2008) http://endo.endojournals.org/cgi/content/full/149/11/5619?maxtoshows=80&RESULTFORMAT=fulltext=cannabinoid&searchid=1&FIRSTINDEX=240&resourcetype=HWCIT

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?maxtoshows=80&RESULTFORMAT=fulltext=cannabinoid&searchid=1&FIRSTINDEX=320&resourcetype=HWCIT#content-block
Cannabinoid CB2 Receptor Potentiates Obesity-Associated Inflammation, Insulin Resistance and Hepatic Steatosis (full - 2009) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2688760/?tool=pubmed

Cannabinoid receptor-dependent and -independent anti-proliferative effects of omega-3 ethanolamides in androgen receptor-positive and -negative prostate cancer cell lines. (full – 2010) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2930808/?tool=pubmed


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

Effects of a Selective Cannabinoid CB2 Agonist and Antagonist on Intravenous Nicotine Self Administration and Reinstatement of Nicotine Seeking. (full – 2012) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3266883/?tool=pubmed

Early Endogenous Activation of CB1 and CB2 Receptors after Spinal Cord Injury Is a Protective Response Involved in Spontaneous Recovery (full – 2012) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3496738/

The role of CB2 receptor ligands in human eosinophil function (full – 2012) http://www.biomedcentral.com/content/pdf/2050-6511-13-S1-A13.pdf

The maintenance of cisplatin- and paclitaxel-induced mechanical and cold allodynia is suppressed by cannabinoid CB2 receptor activation and independent of CXCR4 signaling in models of chemotherapy-induced peripheral neuropathy. (full – 2012) http://www.molecularpain.com/content/8/1/71

Effect of omega-3 polyunsaturated fatty acids on the endocannabinoid system in osteoblast-like cells and muscle (abst – 2012) http://docs.lib.purdue.edu/dissertations/AAI3444794/


Mechanisms Of Cannabidiol Neuroprotection In Hypoxic-Ischemic Newborn Pigs: Role Of 5HT1A And CB2 Receptors. (abst – 2013) http://www.ncbi.nlm.nih.gov/pubmed/23587650


Modulation of anxiety-like behaviour by the endocannabinoid 2-arachidonoylglycerol (2-AG) in the dorsolateral periaqueductal gray.  (abst – 2013)  

Synaptic plasticity alterations associated with memory impairment induced by deletion of CB2 cannabinoid receptors.  (abst – 2013)  

CB1 and CB2 contribute to antinociceptive and anti-inflammatory effects of electroacupuncture on experimental arthritis of the rat temporomandibular joint.  (abst – 2013)  

Activation of spinal cannabinoid cb2 receptors inhibits neuropathic pain in streptozotocin-induced diabetic mice.  (abst – 2013)  

Activation of cortical type 2 cannabinoid receptors ameliorates ischemic brain injury  (news – 2013)  

Cannabinoid Trans-Caryophyllene Protects Brain Cells From Ischemia  (news – 2013)  
http://www.medicalnewstoday.com/articles/256799.php

AM-678 - see JWH -100

AM-694 – CB1 & CB2 agonist

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

The impact of changes in UK classification of the synthetic cannabinoid receptor agonists in 'Spice'.  (abst – 2011)  

The detection of the urinary metabolites of 1-[(5-fluoropentyl)-1H-indol-3-yl](2-iodophenyl)methanone (AM-694), a high affinity cannabimimetic, by gas chromatography - mass spectrometry.  (abst – 2012)  

Acute toxicity due to the confirmed consumption of synthetic cannabinoids: clinical and laboratory findings  (abst – 2012)  
Synthetic Cannabinoids - The Challenges of Testing for Designer Drugs (article – 2013)  

Toxicological profiles of selected synthetic cannabinoids showing high binding affinities to the cannabinoid receptor subtype CB1. (abst – 2013)  

A Case of Cannabinoid Hyperemesis Syndrome Caused by Synthetic Cannabinoids. (abst – 2013)  

**AM-1172** - anandamide transport inhibitor  

Anandamide transport is independent of fatty-acid amide hydrolase activity and is blocked by the hydrolysis-resistant inhibitor AM1172. (full – 2004)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC423268/  

New molecule may be basis for drugs that battle overeating and drug dependency (news – 2004)  

Easing anxiety with anandamide (news – 2004)  

Anandamide Compound Targets Brain's 'Bliss' System (news – 2005)  
http://alcoholism.about.com/od/cure/a/blnida050112.htm  

**STUDIES OF ANANDAMIDE ACCUMULATION INHIBITORS IN CEREBELLAR GRANULE NEURONS** (full – 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2248273/  

**AM-1241** - CB 2 agonist  

Activation of CB2 cannabinoid receptors by AM1241 inhibits experimental neuropathic pain: Pain inhibition by receptors not present in the CNS (full - 2003)  
http://www.pnas.org/content/100/18/10529.full
Inhibition of Inflammatory Hyperalgesia by Activation of Peripheral CB2 Cannabinoid Receptors (full – 2003)  
http://journals.lww.com/anesthesiology/Fulltext/2003/10000/Inhibition_of_Inflammatory_Hyperalgesia_by_CB2_1.aspx


CB2 cannabinoid receptor activation produces antinociception by stimulating peripheral release of endogenous opioids (full - 2005)  
http://www.pnas.org/content/102/8/3093.full

Cannabinoid CB2 receptor agonist activity in the hindpaw incision model of postoperative pain. (abst - 2005)  

In vitro pharmacological characterization of AM1241: a protean agonist at the cannabinoid CB2 receptor? (full - 2006)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2013801/?tool=pubmed

AM1241, a cannabinoid CB2 receptor selective compound, delays disease progression in a mouse model of amyotrophic lateral sclerosis. (abst - 2006)  

The CB2 cannabinoid agonist AM-1241 prolongs survival in a transgenic mouse model of amyotrophic lateral sclerosis when initiated at symptom onset (full - 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2819701/?tool=pmcentrez

Peripheral Cannabinoids Attenuate Carcinoma Induced Nociception in Mice (full - 2008)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2771220/

Selective Activation of Cannabinoid CB2 Receptors Suppresses Neuropathic Nociception Induced by Treatment with the Chemotherapeutic Agent Paclitaxel in Rats (full - 2008)  
http://jpet.aspetjournals.org/content/327/2/584.full#content-block

The endocannabinoid system in amyotrophic lateral sclerosis. (abst - 2008)  

Activation of the cannabinoid 2 receptor (CB2) protects against experimental colitis. (full - 2009)  

Spinal and peripheral analgesic effects of the CB cannabinoid receptor agonist AM1241 in two models of bone cancer-induced pain. (full - 2010)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2931557/?tool=pubmed

A cannabinoid 2 receptor agonist attenuates bone cancer-induced pain and bone loss. (abst - 2010)  

Cannabinoids attenuate cancer pain and proliferation in a mouse model.
Self-medication of a cannabinoid CB(2) agonist in an animal model of neuropathic pain.  
(abst – 2011)  

Regulation of hematopoietic stem cell trafficking and mobilization by the endocannabinoid system.  
(abst – 2011)  

Cannabinoid receptor 2 and its agonists mediate hematopoiesis and hematopoietic stem and progenitor cell mobilization.  
(abst – 2011)  

Antinociceptive effects induced through the stimulation of spinal cannabinoid type 2 receptors in chronically inflamed mice  
(abst - 2011)  
http://www.unboundmedicine.com/medline/ebm/record/21771590/abstract/Antinociceptive_effects_induced_through_the_stimulation_of_spinal_cannabinoid_type_2_receptors_in_chronically_inflamed_mice

Effects of a Selective Cannabinoid CB2 Agonist and Antagonist on Intravenous Nicotine Self Administration and Reinstatement of Nicotine Seeking.  
(full – 2012)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3266883/?tool=pubmed

Therapeutic modulation of cannabinoid lipid signaling: Metabolic profiling of a novel antinociceptive cannabinoid-2 receptor agonist.  
(abst – 2012)  

Prevention of Fibrosis Progression in CCl4-Treated Rats: Role of the Hepatic Endocannabinoid and Apelin Systems  
(abst – 2012)  
http://fpet.aspetjournals.org/content/340/3/629.abstract?sid=ae58f15a-06bb-4a81-b850-61bb89fd59f5

Diuretic effects of cannabinoids.  
(abst – 2012)  

Cannabinoid Receptors as Therapeutic Targets for Dialysis-Induced Peritoneal Fibrosis.  
(abst – 2013)  

**AM-1346** - CB1 agonist

Synthetic Cannabinoid May Aid Fertility In Smokers  
(news - 2006)  
http://www.medicalnewstoday.com/articles/58063.php

Marijuana-like Chemical Can Restore Sperm Function Lost to Tobacco Abuse  
(news - 2006)  
http://www.rxpgnews.com/specialtopics/article_5093.shtml

Cannabis-based boost for smokers' suffering sperm  
(news - 2006)
Effects of AM1346, a high-affinity CB1 receptor selective anandamide analog, on open-field behavior in rats. (abst – 2007) http://www.ncbi.nlm.nih.gov/pubmed/17912052

Discriminative stimulus functions in rats of AM1346, a high-affinity CB1R selective anandamide analog. (full – 2008) http://www.springerlink.com/content/n278340k6q47141k/fulltext.html


**AM-1710** – CB2 agonist

Pharmacological characterization of AM1710, a putative cannabinoid CB(2) agonist from the cannabilactone class: Antinociception without central nervous system side-effects. (abst – 2011) http://www.unboundmedicine.com/medline/ebm/record/21382397/abstract/Pharmacological_characterization_of_AM1710_a_putative_cannabinoid_CB_2__agonist_from_the_cannabilactone_class:_Antinociception_without_central_nervous_system_side_effects_

The maintenance of cisplatin- and paclitaxel-induced mechanical and cold allodynia is suppressed by cannabinoid CB2 receptor activation and independent of CXCR4 signaling in models of chemotherapy-induced peripheral neuropathy (full – 2012) http://www.molecularpain.com/content/8/1/71


**AM-2201** – CB1 agonist


Identification and Structural Elucidation of Four Cannabimimetic Compounds (RCS-4, AM-2201, JWH-203 and JWH-210) in Seized Products. (abst – 2013)  

Qualitative Confirmation of 9 Synthetic Cannabinoids and 20 Metabolites in Human Urine Using LC-MS/MS and Library Search. (abst – 2013)  

Analysis of new classes of recreational drugs in sewage: Synthetic cannabinoids and amphetamine-like substances. (abst – 2013)  

Driving under the influence of synthetic cannabinoids ("Spice"): a case series. (abst – 2013)  

Validation of a Novel Immunoassay for the Detection of Synthetic Cannabinoids and Metabolites in Urine Specimens. (abst – 2013)  

K2 Toxicity: Fatal Case of Psychiatric Complications Following AM2201 Exposure. (abst – 2013)  

Identification and Structural Elucidation of Four Cannabimimetic Compounds (RCS-4, AM-2201, JWH-203 and JWH-210) in Seized Products  
http://jat.oxfordjournals.org/content/37/2/56.abstract?sid=7be65428-0f18-4917-884b-c35f5a2819af

A Case of Cannabinoid Hyperemesis Syndrome Caused by Synthetic Cannabinoids.  
(abst – 2013)  

**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)  


Another nail in coffin of synthetic cannabis  
(news – 2011)  

Characteristics of the designer drug and synthetic cannabinoid receptor agonist AM-2201 regarding its chemistry and metabolism. (abst – 2013)  
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/


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%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=T=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=800&resourcetype=WCI


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-4dab-8b8c-38c0c63c19ad
**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=T=&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. (abst – 2011)


**AM-6545** – CB1 antagonist

Rehashing endocannabinoid antagonists: can we selectively target the periphery to safely treat obesity and type 2 diabetes? (full – 2010)


**AM-6546** – CB1 antagonist


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

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

Equipotent Inhibition of Fatty Acid Amide Hydrolase and Monoacylglycerol Lipase - Dual Targets of the Endocannabinoid System to Protect against Seizure Pathology.  
(abst – 2012)  

**AS- 1535907** synthetic, GPR119 agonist

The role of small molecule GPR119 agonist, AS1535907, in glucose-stimulated insulin secretion and pancreatic β-cell function  
(abst – 2010)  

Novel GPR119 agonist AS1535907 contributes to first-phase insulin secretion in rat perfused pancreas and diabetic db/db mice.  
(abst – 2010)  

**AS- 1907417** synthetic, GPR119 agonist

AS1907417, a novel GPR119 agonist, as an insulinotropic and β-cell preservative agent for the treatment of type 2 diabetes.  
(abst – 2010)  

**CBD-ABN/ ABNORMAL CANNABIDIOL/ CAY10429** -

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

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)  

International Union of Basic and Clinical Pharmacology. LXXIX. Cannabinoid Receptors and Their Ligands: Beyond CB1 and CB2  
(full – 2010)  
N-arachidonoyl glycine, an abundant endogenous lipid, potently drives directed cellular migration through GPR18, the putative abnormal cannabidiol receptor  
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)  

The abnormal cannabidiol analogue O-1602 reduces nociception in a rat model of acute arthritis via the putative cannabinoid receptor GPR55.  
(abst – 2011)  

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)  

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

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-38c0e63c19ad

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-38c0e63c19ad

**CANNABINOR** - CB2 agonist

Pharmos Initiates Phase I Trial of CB2-Selective Drug Candidate Cannabinor  
(news – 2005)  

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


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


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


CESAMET – see NABILONE
**COMPOUND A** - CB1/2 agonist that is excluded from the brain


**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](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](http://www.jbc.org/content/271/18/10640.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=Hexahydrocannabinol&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT)


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


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


CP47,497-C8 and JWH073, commonly found in 'Spice' herbal blends, are potent and efficacious CB(1) cannabinoid receptor agonists.  (abst – 2011)  http://www.ncbi.nlm.nih.gov/pubmed/21333643


Use of high-resolution accurate mass spectrometry to detect reported and previously unreported cannabinomimetics in "herbal high" products.  (abst – 2011)  http://www.ncbi.nlm.nih.gov/pubmed/20529459


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


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

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, CP 55,940, WIN 55,212-2 and anandamide.  (full - 1993)  http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2175863/?tool=pmcentrez&page=1


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


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=pmcentre

Cannabinoid CB1-receptor mediated regulation of gastrointestinal motility in mice in a model of intestinal inflammation (full - 2001)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1572987/?tool=pmcentre

Cannabinoid effects on anxiety-related behaviours and hypothalamic neurotransmitters. (abst - 2001)  

The potent emetogenic effects of the endocannabinoid, 2-AG (2-arachidonoylglycerol) are blocked by delta(9)-tetrahydrocannabinol and other cannabinoids. (full – 2002)  
http://jpet.aspetjournals.org/content/300/1/34.long

Chronic Morphine Modulates the Contents of the Endocannabinoid, 2-Arachidonoyl Glycerol, in Rat Brain (full - 2003)  
http://www.nature.com/npp/journal/v28/n6/full/1300117a.html

Inhibition of guinea-pig and human sensory nerve activity and the cough reflex in guinea-pigs by cannabinoid (CB2) receptor activation. (full - 2003)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1574031/?tool=pubmed

CANNABINOIDS ALTER RECOGNITION MEMORY IN RATS (full – 2003)  

Synergistic Interactions between Cannabinoids and Environmental Stress in the Activation of the Central Amygdala (full - 2005)  
http://www.nature.com/npp/journal/v30/n3/full/1300535a.html


Effects of repeated administration with CP-55,940, a cannabinoid CB1 receptor agonist on the metabolism of the hepatic heme. (abst – 2005)  

Endocannabinoids -- The Brain's Cannabis -- Demonstrate Novel Modes Of Action To Stress (news - 2005)  

Chronologically overlapping occurrences of nicotine-induced anxiety- and depression-related behavioral symptoms: effects of anxiolytic and cannabinoid drugs (full - 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2075518/?tool=pubmed
Control of spasticity in a multiple sclerosis model is mediated by CB1, not CB2, cannabinoid receptors. (full - 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2189718/?tool=pubmed

The orphan receptor GPR55 is a novel cannabinoid receptor. (full – 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2095107/?tool=pubmed

Spinal cannabinoid receptor type 2 activation reduces hypersensitivity and spinal cord glial activation after paw incision. (full - 2007)  

Virodhamine and CP55,940 modulate cAMP production and IL-8 release in human bronchial epithelial cells. (full – 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2042924/?tool=pubmed

CB2 receptors in the brain: role in central immune function (full - 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2219530/?tool=pmcentrez

Cannabinoids enhance gastric X/A-like cells activity. (full – 2008)  

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

Cannabinoids Inhibit HIV-1 Gp120-Mediated Insults in Brain Microvascular Endothelial Cells (full - 2008)  
http://www.jimmunol.org/cgi/content/full/181/9/6406?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=160&resourcetype=HWCIT

The cannabinoid CP55,940 prolongs survival and improves locomotor activity in Drosophila melanogaster against paraquat: implications in Parkinson's disease. (abst - 2008)  

Distribution and function of cannabinoid receptors 1 and 2 in the rat, monkey and human bladder. (abst - 2009)  

Attenuation of morphine antinociceptive tolerance by a CB(1) receptor agonist and an NMDA receptor antagonist: Interactive effects. (full – 2010)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2813317/?tool=pubmed

Cannabinoid inhibition of macrophage migration to the trans-activating (Tat) protein of HIV-1 is linked to the CB(2) cannabinoid receptor. (full – 2010)  
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Human metabolites of synthetic cannabinoids JWH-018 and JWH-073 bind with high affinity and act as potent agonists at cannabinoid type-2 receptors.  (abst – 2013)

Phencyclidine-induced social withdrawal results from deficient stimulation of cannabinoid CB1 receptors: implications for schizophrenia.  (abst – 2013)

G-Protein Receptor Kinase 5 Regulates the Cannabinoid Receptor 2-Induced Upregulation of Serotonin 2A Receptors.  (abst – 2013)


Regulation of cell proliferation by GPR55/cannabinoid receptors using (R,R')-4'-methoxy-1-naphthylfenoterol in rat C6 glioma cell line  (abst – 2013)
http://www.abstractsonline.com/Plan/ViewAbstract.aspx?sKey=695437a2-7613-4bef-8697-2294df2da859&cKey=18ba6eb0-2c5f-4004-a56f-2d1f450e2ed1&mKey=9b2d28e7-24a0-466f-a3c9-07c21f6e9bc9

CRA–13  CB1 & CB2 agonist

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Cannabinoid Receptor Agonist 13, a Novel Cannabinoid Agonist: First in Human Pharmacokinetics and Safety (full – 2009)
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**DEXANABINOL** - see HU-211

**DRONABINOL** – a synthetic THC in sesame oil – also see MARINOL

Dronabinol enhancement of appetite in cancer patients.  (abst - 1990)
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Recent clinical experience with dronabinol.  (abst - 1991)
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Dronabinol effects on weight in patients with HIV infection.  (abst - 1992)
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Effects of dronabinol on anorexia and disturbed behavior in patients with Alzheimer's disease  (abst - 1997)
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Preliminary observation with dronabinol in patients with intractable pruritus secondary to cholestatic liver disease.  (abst - 2002)
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Cannabinoid rotation in a young woman with chronic cystitis  (abst - 2003)
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On the application of cannabis in paediatrics and epileptology.  (abst - 2003)

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Therapeutic potential of cannabinoids in CNS disease.  (abst - 2003)

MARINOL® (Dronabinol) Capsules  (monograph - 2004)
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Does the cannabinoid dronabinol reduce central pain in multiple sclerosis? Randomised double blind placebo controlled crossover trial   (full - 2004)
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A Novel Intervention for the Treatment of Gout in an Elderly Rehabilitation Patient in Whom Conventional Treatment was Ineffective  (full – 2004)
http://www.medicine.virginia.edu/clinical/departments/physical-medicine-rehabilitation/Gout-page


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Effects of a cannabinoid receptor agonist on colonic motor and sensory functions in humans: a randomized, placebo-controlled study (full - 2007)  http://ajpgi.physiology.org/cgi/content/full/293/1/G137


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


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Synthetic delta-9-tetrahydrocannabinol (dronabinol) can improve the symptoms of schizophrenia. (abst - 2009) http://www.unboundmedicine.com/medline/ebm/record/19440079/abstract/

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Dronabinol, a cannabinoid agonist, reduces hair pulling in trichotillomania: a pilot study. (abst – 2011)  
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Pharmacogenetic Trial of a Cannabinoid Agonist Shows Reduced Fasting Colonic Motility in Patients with Non-Constipated Irritable Bowel Syndrome. (abst – 2011)  

Drunk versus drugged: How different are the drivers? (abst – 2011)  

Dronabinol for the treatment of cannabis dependence: a randomized, double-blind, placebo-controlled trial. (abst – 2011)  
http://www.unboundmedicine.com/medline/ebm/record/21310551/abstract/Dronabinol_for_the_treatment_of_cannabis_dependence:_a_randomized_double_blind_placebo_controlled_trial

What Are Prescription Drugs That Are a Substitute for Marijuana? (news – 2011)  
http://www.livestrong.com/article/137065-what-are-prescription-drugs-that-are-substitute-marijuana/#ixzz21Ia1dVQG

Science: THC effective in trichotillomania symptoms in a pilot study (news – 2011)  

DRONABINOL capsule [Watson Laboratories, Inc.] (monograph - 2012)  

The Therapeutic Potential of Cannabis and Cannabinoids (full – 2012)  
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Endocannabinoids in nervous system health and disease: the big picture in a nutshell (full – 2012)  [http://rstb.royalsocietypublishing.org/content/367/1607/3193.full](http://rstb.royalsocietypublishing.org/content/367/1607/3193.full)


Simultaneous and sensitive LC–MS/MS determination of tetrahydrocannabinol and metabolites in human plasma  (abst – 2013)


The medical use of cannabis for reducing morbidity and mortality in patients with HIV/AIDS. (abstr – 2013) [Link](http://www.ncbi.nlm.nih.gov/pubmed/23633327)


**ELMIRIC ACIDS** - anandamide analogs

The elmiric acids: biologically active anandamide analogs (full - 2007) [Link](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2621443/?tool=pmcentrez)

Potential anti-inflammatory actions of the elmiric (lipoamino) acids (full - 2007) [Link](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1896102/?tool=pmcentrez)

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

ETS-2101- see HU-211

**GP1a** - CB2 agonist

Immunoregulation of a CB2 receptor agonist in a murine model of neuroAIDS. (full – 2010) [Link](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3109320/)


GW405833 – CB2 agonist

Cannabinoid Receptor 2 Protects against Acute Experimental Sepsis in Mice. (full – 2013)  http://www.hindawi.com/journals/mi/2013/741303/


Effects of the cannabinoid 2 receptor-selective agonist GW405833 in assays of acute pain-stimulated and paindepressed behavior in rats (abst – 2013)  http://www.fasebj.org/cgi/content/meeting_abstract/27/1_MeetingAbstracts/886.9?sid=eea722c0-971c-4daa-8b8c-38c0c63c19ad

HEXAHYDROCANNABINOLS - synthetic cannabinoid derivatives

Hexahydrocannabinols, novel synthetic cannabinoid derivatives, suppress the tumor growth by inhibiting the VEGF secretion and angiogenesis (abst - 2009)  http://www.fasebj.org/cgi/content/meeting_abstract/23/1_MeetingAbstracts/761.3?maxtoshow=&hits=10&RESULTFORMAT=&fulltext=cannabin&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&sortspec=relevance&resourcetype=HWCIT

Involvement of NSAID-activated gene-1 in a novel synthetic hexahydrocannabinol analogue-induced growth inhibition and apoptosis of colon cancer cells (abst - 2010)  http://www.fasebj.org/cgi/content/meeting_abstract/24/1_MeetingAbstracts/965.8?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=Hexahydrocannabinol&searchid=1&FIRSTINDEX=0&resourcetype=HWCIT

Induction of p53-independent apoptosis by a novel synthetic hexahydrocannabinol analog is mediated via Sp1-dependent NSAID-activated gene-1 in colon cancer cells (abst - 2010)  http://www.sciencedirect.com/science?_ob=ArticleURL&_udi=B6T4P-4YM7FF0-2&_user=10&_coverDate=07%2F01%2F2010&_rdoc=1&_fmt=high&_orig=search&_sort=d&_docanchor=&view=c&_searchStrId=1313682160&_rerunOrigin= scholar.google&acct=C000050221&version=1&_urlVersion=0&_userid=10&md5=6f222e32968fcf2744674d5217dcecb
Novel hexahydrocannabinol analogs as potential anti-cancer agents inhibit cell proliferation and tumor angiogenesis. (abst – 2011)  

Anti-tumor activity of the novel hexahydrocannabinol analog LYR-8 in Human colorectal tumor xenograft is mediated through the inhibition of Akt and hypoxia-inducible factor-1α activation. (full – 2012)  
https://www.jstage.jst.go.jp/article/bpb/35/6/35_b12-00020/_pdf

**HU-210**  CB 1 & CB 2 agonist

Learning impairment produced in rats by the cannabinoid agonist HU 210 in a water-maze task. (abst – 1999)  

Suppression of Nerve Growth Factor Trk Receptors and Prolactin Receptors by Endocannabinoids Leads to Inhibition of Human Breast and Prostate Cancer Cell Proliferation  (full - 2000)  
http://endo.endojournals.org/cgi/content/full/141/1/118

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

Involvement of central and peripheral cannabinoid receptors in the regulation of heart resistance to arrhythmogenic effects of epinephrine. (abst - 2000)  

Inhibitory effects of the cannabinoid agonist HU 210 on rat sexual behaviour.  (abst – 2000)  

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=eb71d6d7a06f311440761cfae6a7d081bcc2771d

Influence of the CB1 receptor antagonist, AM 251, on the regional haemodynamic effects of WIN-55212-2 or HU 210 in conscious rats  (full - 2002)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1573379/?tool=pmcentrez

Activation of cannabinoid receptors decreases the area of ischemic myocardial necrosis. (abst - 2002)  
Increase of the heart arrhythmogenic resistance and decrease of the myocardial necrosis zone during activation of cannabinoid receptors (abst – 2002) 

The cannabinoids R(-)-7-hydroxy-delta-6-tetra-hydrocannabinol-dimethylheptyl (HU-210), 2-O-arachidonoylglycerylether (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

Inhibition of tumor angiogenesis by cannabinoids (full - 2003) 
http://www.fasebj.org/cgi/reprint/02-0795fjev?maxtoshow=&hits=10&RESULTFORMAT=&fulltext=cannabis&andorexactfulltext=and&searchid=1&FIRSTINDEX=20&sortspec=relevance&resourcetype=HWCIT

CB1 cannabinoid receptor antagonism promotes remodeling and cannabinoid treatment prevents endothelial dysfunction and hypotension in rats with myocardial infarction (full - 2003) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1573770/?tool=pmcentrez


The endogenous cannabinoid system protects against colonic inflammation (full - 2004) http://www.ncbi.nlm.nih.gov/pmc/articles/PMC385396/?tool=pmcentrez


Direct cerebrovascular effects of CB1 receptor activation by the synthetic endocannabinoid HU-210 in vivo (full - 2005) http://www.nature.com/jcbfm/journal/v25/n1/full/9591524.0581a.html

Cannabinoids promote embryonic and adult hippocampus neurogenesis and produce anxiolytic- and antidepressant-like effects (full - 2005) http://www.jci.org/articles/view/25509/version/1


The analgesic activity of paracetamol is prevented by the blockade of cannabinoid CB1 receptors (abst – 2005) http://www.sciencedirect.com/science/article/pii/S00142999905013178

Marijuana May Spur New Brain Cells  (news - 2005)

Study Shows Marijuana Promotes Neuron Growth  (news - 2005)
http://english.ohmynews.com/articleview/article_view.asp?menu=c10400&no=253377&rel_no=1

Marijuana May Grow Neurons in the Brain  (news - 2005)
http://www.medpagetoday.com/Psychiatry/AnxietyStress/1934

Surprising Brain Effects From Pot-Like Drug  (news – 2005)

Marijuana might cause new cell growth in the brain  (news – 2005)
(may need registration)
http://www.newscientist.com/article/dn8155

Actions of the FAAH inhibitor URB597 in neuropathic and inflammatory chronic pain models  (full - 2006)
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1751298/?tool=pmcentrez


Cannabinoids Ameliorate Pain and Reduce Disease Pathology in Cerulein-Induced Acute Pancreatitis  (full - 2007)

Increased endocannabinoid levels reduce the development of precancerous lesions in the mouse colon  (full - 2007)
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2755791/?tool=pmcentrez

Cannabinoids Induce Glioma Stem-like Cell Differentiation and Inhibit Gliomagenesis  (full - 2007)
http://www.jbc.org/content/282/9/6854.long

The synthetic cannabinoid HU210 induces spatial memory deficits and suppresses hippocampal firing rate in rats  (full – 2007)
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2013991/

The synthetic cannabinoid HU-210 attenuates neural damage in diabetic mice and hyperglycemic pheochromocytoma PC12 cells  (abst - 2007)
http://lib.bioinfo.pl/pmid:17604177

The synthetic cannabinoids attenuate allodynia and hyperalgesia in a rat model of trigeminal neuropathic pain.  (abst – 2007)

Excitotoxicity in a chronic model of multiple sclerosis: Neuroprotective effects of cannabinoids through CB1 and CB2 receptor activation.  (abst – 2007)
Repeated Cannabinoid Injections into the Rat Periaqueductal Gray Enhances Subsequent Morphine Antinociception (full - 2008)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2743428/?tool=pmcentrez

Cannabinoid receptor 1 is a potential drug target for treatment of translocation-positive rhabdomyosarcoma (full - 2009)  
http://met.aacrjournals.org/content/8/7/1838.full

Lipid rafts regulate 2-arachidonoylglycerol metabolism and physiological activity in the striatum (full – 2009)  

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

Involvement of cannabinoid-1 and cannabinoid-2 receptors in septic ileus. (full – 2010)  

Antitumorigenic Effects of Cannabinoids beyond Apoptosis (full - 2010)  
http://jpet.aspetjournals.org/content/332/2/336.full?sid=af53ea87-ab4b-426e-9c7e-8f750e9c4a17

Regulation of nausea and vomiting by cannabinoids (abst - 2010)  

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

The potential for clinical use of cannabinoids in treatment of cardiovascular diseases. (full – 2011)  

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

Cannabinoid Receptor Type 1 Protects Nigrostriatal Dopaminergic Neurons against MPTP Neurotoxicity by Inhibiting Microglial Activation. (full – 2011)  
http://www.jimmunol.org/content/187/12/6508.full?sid=c3422dd2-7ad0-42e4-a862-845dc670f7cf

Pharmacological activation/inhibition of the cannabinoid system affects alcohol withdrawal-induced neuronal hypersensitivity to excitotoxic insults. (abst – 2011)  

Regulation of nausea and vomiting by cannabinoids. (abst – 2011)  
The effects of cannabinoid drugs on abnormal involuntary movements in dyskinetic and non-dyskinetic 6-hydroxydopamine lesioned rats. (abst – 2011)

Increased brain metabolism after acute administration of the synthetic cannabinoid HU210: A small animal PET imaging study with (18)F-FDG. (abst – 2011)

Cannabinoid HU210 Protects Isolated Rat Stomach against Impairment Caused by Serum of Rats with Experimental Acute Pancreatitis. (full - 2012)
http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0052921

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


Simultaneous analysis of several synthetic cannabinoids, THC, CBD and CBN, in hair by ultra-high performance liquid chromatography tandem mass spectrometry. Method validation and application to real samples. (abst – 2012)


The anti-nausea effects of CB(1) agonists are mediated by an action at the visceral insular cortex. (abst – 2012) http://www.ncbi.nlm.nih.gov/pubmed/22671779
Increased brain metabolism after acute administration of the synthetic cannabinoid HU210: a small animal PET imaging study with 18F-FDG.  (abst – 2012)  

Long-term use of HU210 adversely affects spermatogenesis in rats by modulating the endocannabinoid system  (abst – 2012)  

Getting up to speed with the public health and regulatory challenges posed by new psychoactive substances in the information age  (editorial – 2013)  

Synthetic Cannabinoids -The Challenges of Testing for Designer Drugs  (article – 2013)  

Neuron-type specific cannabinoid-mediated G protein signalling in mouse hippocampus.  (abst – 2013)  

Functional Residues Essential for the Activation of the CB1 Cannabinoid Receptor.  (abst - 2013)  

Effects of cannabinoids and related fatty acids upon the viability of P19 embryonal carcinoma cells.  (abst – 2013)  

Complex Interplay between the Cannabinoid CB1 Receptor and Corticotropin-Releasing Hormone in the Regulation of Appetite, Food Intake and Energy Expenditure  (abst – 2013)  
http://edrv.endojournals.org/cgi/content/meeting_abstract/34/03_MeetingAbstracts/MON-671?sid=89628f3e-b2f1-448c-b0df-984f390dffd2

**HU-211 / DEXANABINOL/ ETS-2101**  - CB 2 agonist

A nonpsychotropic cannabinoid, HU-211, has cerebroprotective effects after closed head injury in the rat.  (abst – 1993)  

HU-211, a Novel Noncompetitive N-Methyl-D-Aspartate Antagonist, Improves Neurological Deficit and Reduces Infarct Volume After Reversible Focal Cerebral Ischemia in the Rat  (full - 1995)  
http://stroke.ahajournals.org/cgi/content/full/26/12/2313

45Ca accumulation in rat brain after closed head injury; attenuation by the novel neuroprotective agent HU-211.  (abst – 1995)  
Development of HU-211 as a neuroprotectant for ischemic brain damage.  (abst – 1995)  

A novel nonpsychotropic cannabinoid, HU-211, in the treatment of experimental pneumococcal meningitis.  (full - 1996)  
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**HU-308** - CB2 agonist

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Non-psychoactive CB2 cannabinoid agonists stimulate neural progenitor proliferation (full - 2005) http://www.fasebj.org/cgi/content/full/20/13/2405?maxtoshow=&hits=10&RESULTFORMAT=&fulltext=cannabis&andorexactfulltext=and&searchid=1&FIRSTINDEX=0&sortspec=relevance&resourcetype=HW

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HU-331 -

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HU-910 – CB2 agonist


JD5037 – CB1 agonist with limited brain penetration

**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)  
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Targeting CB2 cannabinoid receptors as a novel therapy to treat malignant lymphoblastic disease  (full - 2002)  
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Stimulation of cannabinoid receptor 2 (CB2) suppresses microglial activation (full - 2005)  
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CB2 cannabinoid receptor agonist, JWH-015 triggers apoptosis in immune cells: Potential role for CB2 selective ligands as immunosuppressive agents  (full – 2006)  
[http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1864948/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1864948/)

In vivo effects of CB2 receptor-selective cannabinoids on the vasculature of normal and arthritic rat knee joints  (full - 2007)  
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Potential role for CB2 selective ligands as immunosuppressive agents  (full - 2007)  
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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](http://jpet.aspetjournals.org/content/322/3/1144.long)

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CB2 cannabinoid receptor agonist JWH-015 modulates human monocyte migration through defined intracellular signaling pathways. (full – 2008) [http://ajpheart.physiology.org/content/294/3/H1145.long](http://ajpheart.physiology.org/content/294/3/H1145.long)


Crosstalk between Chemokine Receptor CXCR4 and Cannabinoid Receptor CB(2) in Modulating Breast Cancer Growth and Invasion. (full – 2011) [http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3168464/?tool=pubmed](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3168464/?tool=pubmed)

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The CB(2)-preferring agonist JWH015 also potently and efficaciously activates CB(1) in autaptic hippocampal neurons.  (abst – 2012)  http://www.ncbi.nlm.nih.gov/pubmed/22921769


**JWH-018** – CB1 agonist

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JWH018, a common constituent of 'Spice' herbal blends, is a potent and efficacious cannabinoid CB(1) receptor agonist.  (full - 2010)  
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Monitoring of herbal mixtures potentially containing synthetic cannabinoids as psychoactive compounds.  (abst – 2010)  

Chemical analysis of synthetic cannabinoids as designer drugs in herbal products.  (abst – 2010)  

Pharmacological properties and dependence liabilities of synthetic cannabinoids  

Screening for the synthetic cannabinoid JWH-018 and its major metabolites in human doping controls.  (abst - 2010)  

FAQ: K2, Spice Gold, and Herbal 'Incense'  (news - 2010)  

**THIS ISN'T YOUR MOTHER'S SPICE**  (news - 2010)  

College students and use of K2: an emerging drug of abuse in young persons  
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A Characterization of Synthetic Cannabinoid Exposures Reported to the National Poison Data System in 2010  (full – 2012)

The role of CB2 receptor ligands in human eosinophil function  (full – 2012)

Adolescent Exposure of JWH-018 “Spice” Produces Subtle Effects on Learning and Memory Performance in Adulthood  (link to PDF – 2012)
http://www.doaj.org/doaj?func=abstract&id=1075990&q1=cannabinoid&f1=all&b1=and&q2=&f2=all&recNo=7&uiLanguage=en

JWH-018 and JWH-073: (Δ9)-Tetrahydrocannabinol-Like Discriminative Stimulus Effects in Monkeys. (abst – 2012)
http://www.unboundmedicine.com/medline/ebm/record/21965552/abstract/JWH_018_and_JWH_073:_%7BDelta%7D9_Tetrahydrocannabinol_Like_Discriminative_Stimulus_Effects_in_Monkeys

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Detection and disposition of JWH-018 and JWH-073 in mice after exposure to "Magic Gold" smoke.  (abst – 2012)  

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(article – 2013)  

Qualitative Confirmation of 9 Synthetic Cannabinoids and 20 Metabolites in Human Urine Using LC-MS/MS and Library Search.  (abst – 2013)  

Analysis of new classes of recreational drugs in sewage: Synthetic cannabinoids and amphetamine-like substances.  (abst – 2013)  

Toxicological profiles of selected synthetic cannabinoids showing high binding affinities to the cannabinoid receptor subtype CB1.  (abst – 2013)  

Human metabolites of synthetic cannabinoids JWH-018 and JWH-073 bind with high affinity and act as potent agonists at cannabinoid type-2 receptors.  (abst – 2013)  

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Validation of a Novel Immunoassay for the Detection of Synthetic Cannabinoids and Metabolites in Urine Specimens.  (abst – 2013)  

Characteristics of the designer drug and synthetic cannabinoid receptor agonist AM-2201 regarding its chemistry and metabolism.  (abst – 2013)  

Tolerance and cross-tolerance among high-efficacy synthetic cannabinoids JWH-018 and JWH-073 and low-efficacy phytocannabinoid Δ9-THC  (abst – 2013)  
http://www.fasebj.org/cgi/content/meeting_abstract/27/1_MeetingAbstracts/1097.1?sid=eea722c0-971c-4dab-8b8c-38c0c63c19ad

The omega and omega-1 monohydroxyl metabolites of the abused K2/Spice synthetic cannabinoids JWH-018 and JWH-073 bind with high affinity and act as agonists at human cannabinoid 2 receptors (hCB2s)  (abst – 2013)  
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Conditioned taste aversion elicited by synthetic cannabinoid JWH-018 in mice is attenuated by pretreatment with phytocannabinoid Δ9-THC  (abst – 2013)
Structure-dependent inhibitory effects of synthetic cannabinoids against 12-O-tetradecanoylphorbol-13-acetate-induced inflammation and skin tumour promotion in mice (abst – 2013) [1]

A Case of Cannabinoid Hyperemesis Syndrome Caused by Synthetic Cannabinoids. (abst – 2013) [2]

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**JWH-073** - CB1 & CB2 agonist


Chemical analysis of synthetic cannabinoids as designer drugs in herbal products. (abst – 2010) [7]

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Now, There's a Test for That -- Norchem's "Fake Marijuana" Test Reveals Significantly Increased Abuse of Spice/K2 (news - 2010) [9]

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Monohydroxylated metabolites of the K2 synthetic cannabinoid JWH-073 retain intermediate to high cannabinoid 1 receptor (CB1R) affinity and exhibit neutral
antagonist to partial agonist activity.  (abst – 2012)  

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Toxicological profiles of selected synthetic cannabinoids showing high binding affinities to the cannabinoid receptor subtype CB1.  (abst – 2013)


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The omega and omega-1 monohydroxyl metabolites of the abused K2/Spice synthetic cannabinoids JWH-018 and JWH-073 bind with high affinity and act as agonists at human cannabinoid 2 receptors (hCB2s) (abst – 2013) http://www.fasebj.org/cgi/content/meeting_abstract/26/1_MeetingAbstracts/660.8?sid=eea722c0-971c-4daa-8b8c-38c0c63c19ad


**JWH-100 / AM-678** - CB1 agonist

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


**JWH-122** – CB1 agonist

Analysis of 30 synthetic cannabinoids in serum by liquid chromatography-electrospray ionization tandem mass spectrometry after liquid-liquid extraction (abst – 2012)

Screening for synthetic cannabinoids in hair by using LC-QTOF MS: A new and powerful approach to study the penetration of these new psychoactive substances in the population. (full – 2013)  http://msl.sagepub.com/content/early/2013/06/28/0025802413477396.long


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**JWH-133/ 3-(1 1 -dimethylbutyl)- 1-deoxy- 8-THC - CB2 agonist**

Inhibition of tumor angiogenesis by cannabinoids (full - 2003)  http://www.fasebj.org/cgi/reprint/02-0795fjev1?maxtoshow=&hits=10&RESULTFORMAT=&fulltext=cannabis&andorexactfulltext=and&searchid=1&FIRSTINDEX=20&sortspec=relevance&resourcetype=HWCIT
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Effects of cannabinoid receptor-2 activation on accelerated gastrointestinal transit in lipopolysaccharide-treated rats (full - 2004)  
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Cannabinoid-2 receptor mediates protection against hepatic ischemia/reperfusion injury (full - 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2228252/?tool=pmcentrez

Cannabinoids Induce Glioma Stem-like Cell Differentiation and Inhibit Gliomagenesis (full - 2007)  
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Anti-inflammatory property of the cannabinoid receptor-2-selective agonist JWH-133 in a rodent model of autoimmune uveoretinitis (full - 2007)  

In vivo effects of CB2 receptor-selective cannabinoids on the vasculature of normal and arthritic rat knee joints (full - 2007)  
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2219539/?tool=pmcentrez

Influence of nicotinic receptor modulators on CB2 cannabinoid receptor agonist (JWH133)-induced antinociception in mice. (abst – 2007)  

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=HW CIT#content-block

Regression of Fibrosis after Chronic Stimulation of Cannabinoid CB2 Receptor in Cirrhotic Rats (full - 2008)  
http://jpet.aspetjournals.org/content/324/2/475.full?maxtoshow=&hits=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=320&resourcetype=HW CIT#content-block

Cannabinoid 2 receptor induction by IL-12 and its potential as a therapeutic target for the treatment of anaplastic thyroid carcinoma. (full - 2008) http://www.nature.com/cgt/journal/v15/n2/full/7701101a.html

Cannabinoid receptor agonists inhibit growth and metastasis of breast cancer (abst - 2008) http://www.aacrmeetingabstracts.org/cgi/content/meeting_abstract/2008/1_Annual_Meeting/4081?maxtoshow=&hitsover=80&RESULTFORMAT=&fulltext=cannabinoid&searchid=1&FIRSTINDEX=480&resourcetype=HWCIT


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Activation of cannabinoid 2 receptors protects against cerebral ischemia by inhibiting neutrophil recruitment. (full – 2010) http://www.fasebj.org/content/24/3/788.long

Antitumorigenic Effects of Cannabinoids beyond Apoptosis (full - 2010) http://jpet.aspetjournals.org/content/332/2/336.full?sid=af53ea87-ab4b-426e-9c7e-8f750e9c4a17

Cannabinoid (JWH-133) therapy could be effective for treatment of corneal neovascularization (link to PDF – 2010)
Cannabinoid (JWH-133) therapy could be effective for treatment of corneal neovascularization (abst – 2010)

Cannabidiol and other cannabinoids reduce microglial activation in vitro and in vivo: relevance to Alzheimers’ disease (full – 2011)

Is lipid signaling through cannabinoid 2 receptors part of a protective system? (full – 2011)

The activation of the cannabinoid receptor type 2 reduces neutrophilic protease-mediated vulnerability in atherosclerotic plaques (full – 2011)

Brain cannabinoid CB2 receptors modulate cocaine's actions in mice (abst – 2011)

Atheroprotection via cannabinoid receptor-2 is mediated by circulating and vascular cells in vivo. (abst – 2011)

Antinociceptive effects induced through the stimulation of spinal cannabinoid type 2 receptors in chronically inflamed mice (abst - 2011)

Cannabinoid receptor-2 (CB2) agonist ameliorates colitis in IL-10(-/-) mice by attenuating the activation of T cells and promoting their apoptosis. (abst – 2011)

Beneficial paracrine effects of cannabinoid receptor 2 on liver injury and regeneration. (abst – 2011)

Spinal cannabinoid CB2 receptors as a target for neuropathic pain: an investigation using chronic constriction injury. (abst – 2011)

Can marijuana curb cocaine addiction? (news – 2011)

Prolonged oral Cannabinoid Administration prevents Neuroinflammation, lowers beta-amyloid Levels and improves Cognitive Performance in Tg APP 2576 Mice. (full – 2012)
Cannabinoid Receptor 2-Mediated Attenuation of CXCR4-Tropic HIV Infection in Primary CD4+ T Cells  (full – 2012)  
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The fatty acid amide hydrolase inhibitor URB597 exerts anti-inflammatory effects in hippocampus of aged rats and restores an age-related deficit in long-term potentiation  
(full – 2012)  
http://www.jneuroinflammation.com/content/9/1/79

GPR18 in microglia: implications for the CNS and endocannabinoid system signaling  
(full – 2012)  

Cannabinoid type 2 receptor activation downregulates stroke-induced classic and alternative brain macrophage/microglial activation concomitant to neuroprotection.  
(abst – 2012)  

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(abst – 2012)  

Cannabinoid receptor 2 agonist ameliorates mesenteric angiogenesis and portosystemic collaterals in cirrhotic rats.  
(abst – 2012)  

Cannabinoid receptor CB2 protects against balloon-induced neointima formation.  
(abst – 2012)  

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(abst – 2013)  

Attenuation of HIV-1 replication in macrophages by cannabinoid receptor 2 agonists.  
(abst – 2013)  

Effect of Cannabinoid Receptor Activation on Spreading Depression.  
(abst – 2013)  

CB2 Cannabinoid Receptor Agonist Ameliorates Alzheimer-Like Phenotype in AβPP/PS1 Mice.  
(abst – 2013)  

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(abst – 2013)  
**JWH – 150** - CB2 agonist

Cannabinoid Receptor 2-Mediated Attenuation of CXCR4-Tropic HIV Infection in Primary CD4+ T Cells (full – 2012)


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**JWH-200**

Synthetic Cannabinoids -The Challenges of Testing for Designer Drugs (article – 2013)


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**JWH-210** – CB1 agonist

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**KN38-7271/ BAY38-7271** — CB1 & CB2 agonist

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**LBP-1.** CB1 agonist


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**MDA-19** – synthetic, strong CB2 agonist


**MT-178** - CB2 agonist


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**SR-144528** - CB(2) receptor antagonist


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**SURINABANT** - CB1 antagonist


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**URB - 754** slows cannabinoid destruction

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**URB - 937** - slows cannabinoid destruction


**WIN 55,212-2** - CB1 agonist


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