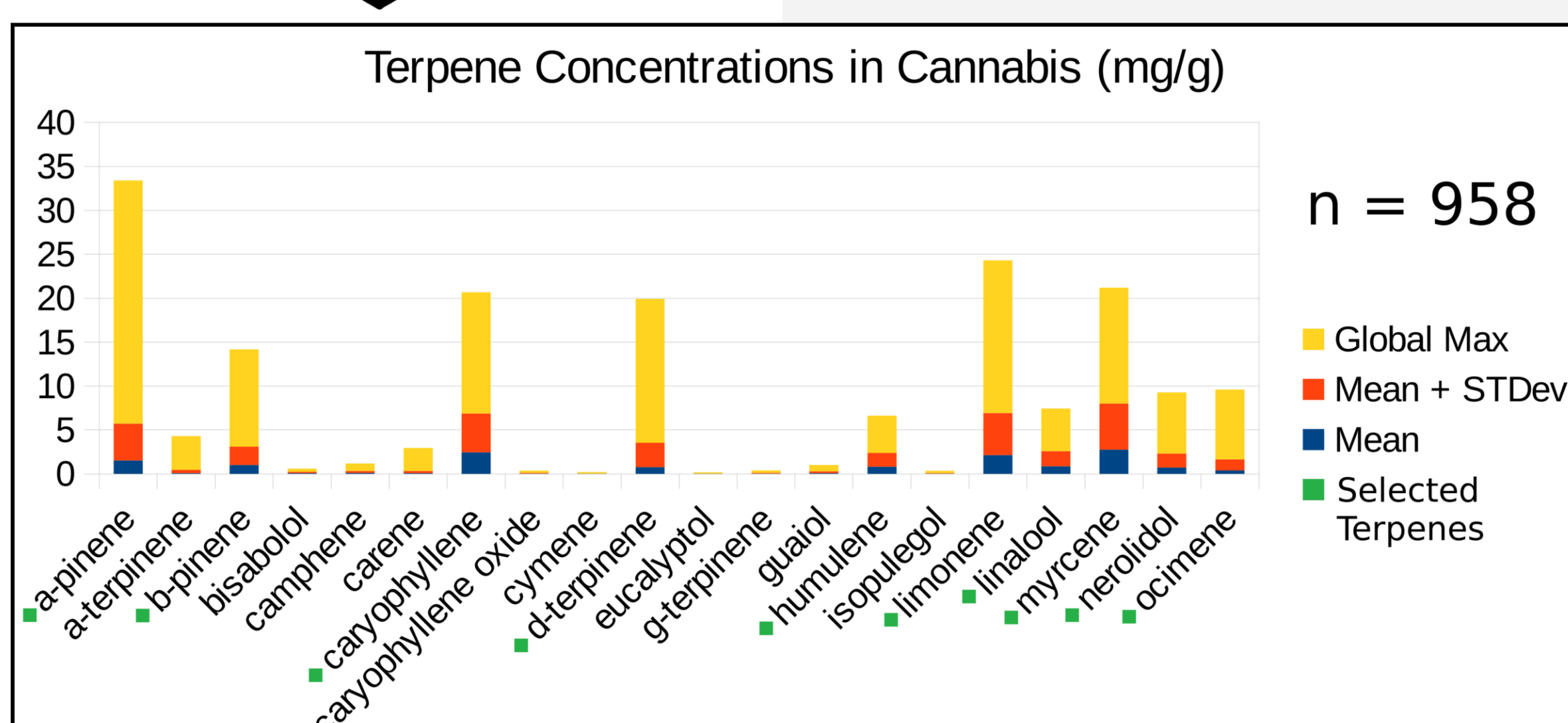


TERPENES AND TERPENOIDS IN CANNABIS II

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In Collaboration with Lief Therapeutics



Terpene	Found In	Smell
Nerolidol	neroli, ginger, jasmine	wood, fresh bark
Humulene	hops	hoppy
Caryophyllene	cloves, hops, black pepper	spicy, sweet
Linalool	lavender, basil	lavender, flowery
d-Terpene	juniper, myristica	musky, diesel
Limonene	lemon, orange	citrus, fruity, sharp
Ocimene	basil	sweet, herbal
Myrcene	bay leaf, hops, mango	sweet, musky
b-Pinene	pine trees, hops	pine, green wood
a-Pinene	pine trees, rosemary	pine, wood

Figure 2 - Table illustrating the 10 terpenes selected from Figure 1 and their associated plant sources and smell. Listed is also color labels used in Figure 3 and Tables 1-9.

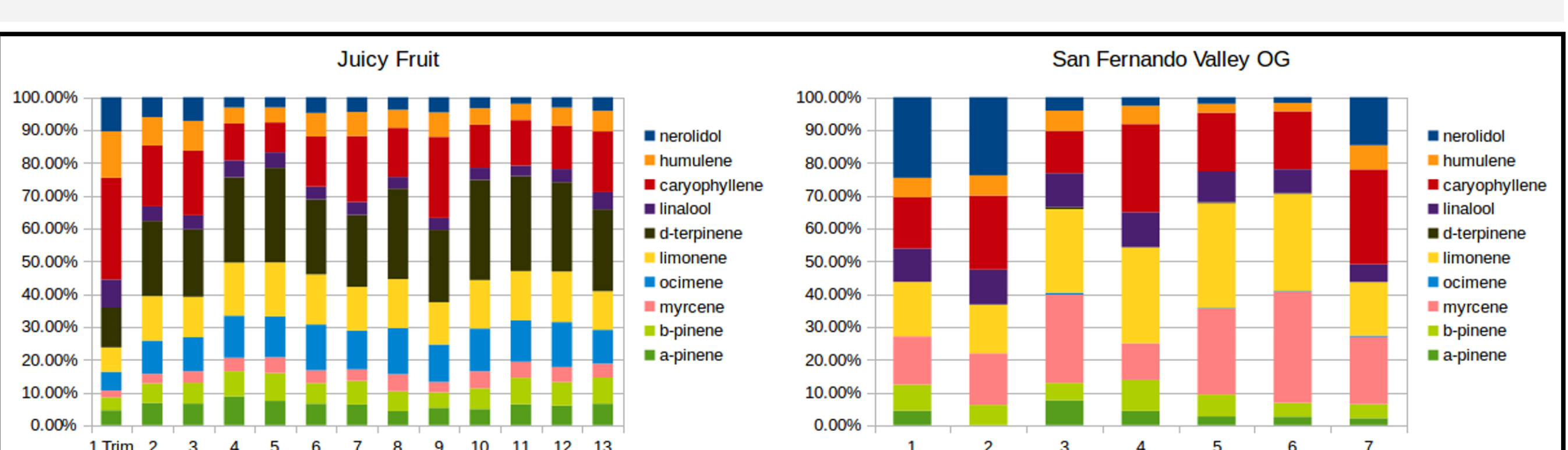


Figure 1 - Terpene Concentrations in Cannabis - Data from a set of 958 samples of cannabis flower. Displayed are mean, standard deviation, and global maximum for 20 terpenes. The 10 most prevalent terpenes are denoted in green for further statistical analysis.

Table 1	Nerolidol			
Author Last Name	Year	Title	Journal	Disorders
Mohd-Shukri	2011	THE EFFECTS OF NEROLIDOL, ALICHAOL AND BERELENOL ON THE MORPHOLOGY OF Trypanosoma evansi IN MICE: A COMPARATIVE STUDY USING LIGHT AND ELECTRON MICROSCOPIC APPROACHES	Malaysian Applied Biology Journal	antimicrobial, antiparasitic, infection
Hansuwa	2015	The Effect of Myrica nuda essential oil and its components a humulene and trans-nerolidol on adhesion and apoptosis of colorectal cancer cells	Cancer Cell and Microenvironment	cancer, colon cancer
Ferreira	2012	Nerolidol effects on mitochondrial and cellular energetics	Toxicology in Vitro	cancer, liver cancer
Russo	2011	Taming THC: potential cannabis synergy and phytocannabinoid-terpenoid entourage effects	British Journal of Pharmacology	inflammation, memory, cognition, pain, depression, anxiety, addiction, epilepsy, cancer, fungal and bacterial infections, MISA
Celik	2016	Beneficial effects of nerolidol on thioacetamide-induced damage of the reproductive system in male rats	Biomedical Research	testicular damage



Table 2	Humulene			
Author Last Name	Year	Title	Journal	Disorders
Legato	2003	Antitumor Activity of Balsam Fir Oil: Production of Reactive Oxygen Species Induced by a Humulene as Possible Mechanism of Action	Pasta Medica	cancer
Hansuwa	2015	The Effect of Myrica nuda essential oil and its components a humulene and trans-nerolidol on adhesion and apoptosis of colorectal cancer cells	Cancer Cell and Microenvironment	cancer, colon cancer
Lan	2011	Health receptor mediated TNF- α family signaling pathway modulate A humulene-induced apoptosis in human colorectal cancer HT29 cells	Oncology Reports	cancer, colon cancer
Kumar	2009	Hypericum perforatum: Nature's mood stabilizer	Indian Journal of Experimental Biology	depression, anxiety, infection
Rogelio	2000	Preventive and therapeutic anti-inflammatory properties of the sesquiterpene a-humulene in experimental allergic inflammation	British Journal of Pharmacology	inflammation, allergy

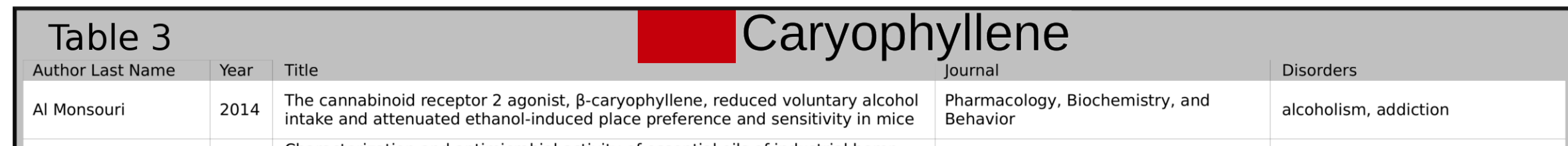


Table 3	Caryophyllene			
Author Last Name	Year	Title	Journal	Disorders
Al Monsour	2014	The cannabinoid receptor 2 agonist, β -caryophyllene, reduced voluntary alcohol intake and attenuated ethanol-induced preference and sensitivity in mice	Pharmacology, Biochemistry, and Behavior	alcoholism, addiction
Nissen	2010	Characterization and antimicrobial activity of essential oils of industrial hemp varieties (Cannabis sativa L.)	Flavor and Fragrance Journal	antimicrobial, infection
Novak	2001	Essential oils of different cultivars of Cannabis sativa L. and their antimicrobial activity	Flavor and Fragrance Journal	antimicrobial, infection
Sepwand	2014	Chemical composition, antioxidant activity and antibacterial effect of essential oils of the aerial parts of <i>Sida acuta</i>	Asian Pacific Journal of Tropical Medicine	antioxidant, infection
Bahi	2014	β -Caryophyllene, a CB2 receptor agonist produces multiple behavioral changes relevant to anxiety and depression in mice	Physiology and Behavior	anxiety, depression, stress
Jung	2015	Caryophyllene potentiates solid tumor growth and lymph node metastasis of B16F1 melanoma cells in high-fat diet-induced obese C57BL/6J mice	Carcinogenesis	cancer, metastasis, melanoma, obesity
Herrera-Ruiz	2006	Antidepressant and anxiolytic effects of hydroalcoholic extract from <i>Salvia elaeagnifolia</i>	Journal of Ethnopharmacology	depression, anxiety
Kumar	2000	Hypericum perforatum: Nature's mood stabilizer	Indian Journal of Experimental Biology	depression, anxiety, infection
McPartland	2001	Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts?	The AAPS Journal	entourage
Burstein	2009	Terpenoids, Endocannabinoids, and Related Analogs in Inflammation	Communicative & Integrative Biology	inflammation, colitis, atherosclerosis, osteoarthritis
Gertsch	2008	Anti-inflammatory cannabinoids in diet	Journal of Experimental Medicine	inflammation, memory, cognition, pain, depression, anxiety, addiction, epilepsy, cancer, fungal and bacterial infections, MISA
Russo	2011	Taming THC: potential cannabis synergy and phytocannabinoid-terpenoid entourage effects	British Journal of Pharmacology	inflammation, memory, cognition, pain, depression, anxiety, addiction, epilepsy, cancer, fungal and bacterial infections, MISA
Bento	2012	Caryophyllene Inhibits Dexamethasone Sodium-Induced Colitis in Mice through CB2 Receptor Activation and PPAR Pathway	American Journal of Pathology	inflammation, ulcerative colitis
Norvath	2011	Caryophyllene ameliorates cisplatin-induced neurotoxicity in a cannabinoid 2-dependent manner	Free Radical Biology and Medicine	neurotoxicity, inflammation, oxidative stress
Guzman-Santos	2002	Capillaria Oleifera Treatment is Neuroprotective and Reduces Neurological Recruitment and Microglia Activation after Motor Cortex Excitotoxic Injury II: Possible Mechanism of Action of β -Caryophyllene	Evidence-Based Complementary and Alternative Medicine	neuroprotective, excitotoxicity, inflammation
Chehadeh	2011	Chemical composition, antioxidant activity and antibacterial effect of essential oils of the aerial parts of <i>Sida acuta</i>	Ramban Maomides Medical Journal	antioxidant, infection
Fine	2013	The Endocannabinoid System, Cannabinoids, and Pain	European Neuromuscular Journal	inflammation, pain, infection
Knaute	2014	The cannabinoid CB2 receptor selective phytocannabinoid beta caryophyllene exerts anxiolytic effects in mouse models of anxiety and neuroprotection	European Neuromuscular Journal	anxiety, neuroprotection

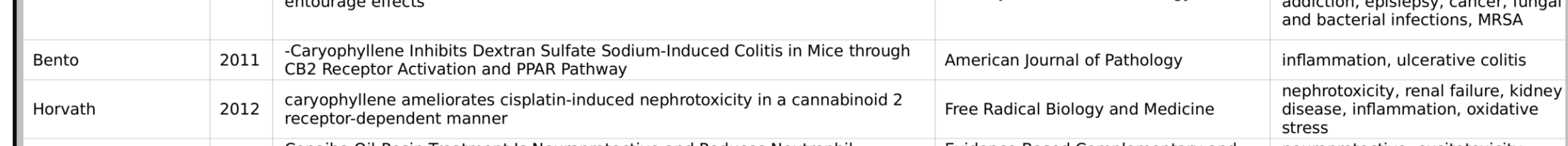


Table 4	Linalool			
Author Last Name	Year	Title	Journal	Disorders
Sepwand	2014	Chemical composition, antioxidant activity and antibacterial effect of essential oils of the aerial parts of <i>Sida acuta</i>	Asian Pacific Journal of Tropical Medicine	antioxidant, infection
Lopes Campello	2015	Sedative, anxiolytic and antidepressant activities of Citrus limon (L.) essential oil in mice	Dis Pharmazie	anxiety, stress, depression
Roskobady	2001	RELAXANT EFFECTS OF OCIMENE BASILICUM ON GUINEA PIG TRACHEAL CHAINS AND ITS POSSIBLE MECHANISMS	DARU Journal of Pharmaceutical Sciences	bronchodilation
Guzman-Gutierrez	2012	Antidepressant activity of <i>Lippia glauca</i> essential oil: Identification of β -pinene and linalool as active principles	Journal of Ethnopharmacology	depression
Herrera-Ruiz	2006	Antidepressant and anxiolytic effects of hydroalcoholic extract from <i>Salvia elaeagnifolia</i>	Journal of Ethnopharmacology	depression, anxiety
Perry	2006	Aromatherapy in the Management of Psychiatric Disorders	CNS Drugs	depression, anxiety, panic, stress, social dysfunction, convulsions
McPartland	2001	Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts?	The AAPS Journal	entourage
Navarra	2015	Citrus bergamia essential oil: from basic research to clinical application	Frontiers in Pharmacology	infection, inflammation, cancer, anxiety, neuroprotective, pain, cardiovascular
Pearna	2005	Anti-inflammatory activity of linalool and linalyl acetate constituents of essential oils	Phytochemistry	inflammation, edema
Russo	2011	Taming THC: potential cannabis synergy and phytocannabinoid-terpenoid entourage effects	British Journal of Pharmacology	inflammation, memory, cognition, pain, depression, anxiety, addiction, epilepsy, cancer, fungal and bacterial infections, MISA
Pearna	2004	Effects of (-)-linalool in the acute hyperalgesia induced by carrageenan, L-glutamate and prostaglandin E2	European Journal of Pharmacology	pain
Pearna	2009	Profile of spinal and supraspinal antinociception of (-)-linalool	European Journal of Pharmacology	pain
Nakanura	2004	Stress Resorption in Restrained Rats by β -Caryophyllene Inhibition and Gene Expression Profiling of Their Whole Blood	Journal of Agricultural and Food Chemistry	stress, blood disorders, anxiety

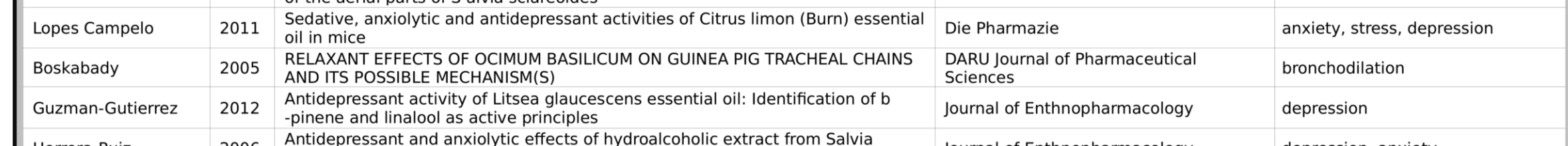


Table 5	d-Terpene			
Author Last Name	Year	Title	Journal	Disorders
Nissen	2010	Characterization and antimicrobial activity of essential oils of industrial hemp varieties (Cannabis sativa L.)	Flavor and Fragrance Journal	antimicrobial, infection
Novak	2001	Essential oils of different cultivars of Cannabis sativa L. and their antimicrobial activity	Flavor and Fragrance Journal	antimicrobial, infection
Turkiz	2005	Genotoxic and oxidative damage potentials in human lymphocytes after exposure to terpenes in vitro	Cytotechnology	antioxidant
Okumura	2011	Terpenole, a component of herbal sage, downregulates AKT1 expression in K562 cells	Oncology Letters	cancer
Aydin	2013	ANTICANCER AND ANTIOXIDANT PROPERTIES OF TERPENOIDS IN RAT BRAIN CELLS	Archives of Industrial Hygiene and Occupational Health	cancer, antioxidant
Macedo	2016	Association of terpenole and diclofenac presents antinociceptive and anti-inflammatory synergistic effects in a model of chronic inflammation	Brazilian Journal of Medical and Biological Research	pain, inflammation

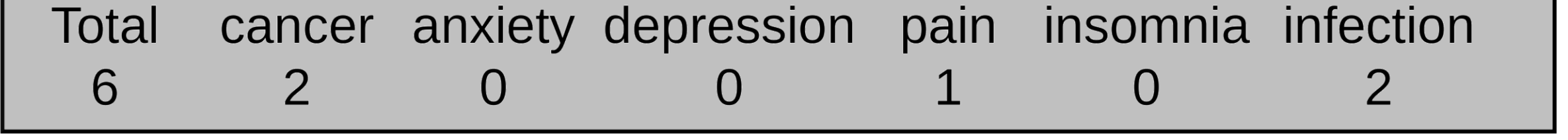


Table 6	Limone			
Author Last Name	Year	Title	Journal	Disorders
van Vuuren	2007	Antimicrobial activity of limonene enantiomers and 3,8-cineole alone and in combination	Flavor and Fragrance Journal	antimicrobial, infection
Ibrahim	2001	Chemical composition, antioxidant activity and phytochemical of essential oils: With special reference to limonene and its suitability for control of insect pests	Agriculture and Food Science in Finland	antimicrobial, infection
Novak	2001	Essential oils of different cultivars of Cannabis sativa L. and their antimicrobial activity	Flavor and Fragrance Journal	antimicrobial, infection
Nissen	2010	Characterization and antimicrobial activity of essential oils of industrial hemp varieties (Cannabis sativa L.)	Flavor and Fragrance Journal	antimicrobial, infection
Bai	2016	Protective Effect of Limonene against Oxidative Stress-Induced Cell Damage in Human Lens Epithelial Cells via the JNK Pathway	Oxidative Medicine and Cellular Longevity	antioxidant
Khannoum	2010	Anxiety-herbal Treatment: A Review	Pharmacology and Therapeutics	anxiety
Lehner	2008	Ambient odor of orange in a dental office reduces anxiety and improves mood	Physiology and Behavior	anxiety
Costa	2013	Citrus aurantium L. essential oil exhibits anxiolytic activity mediated by 5-HT1A receptors and reduces cholesterol after repeated oral treatment	BMC Complementary & Alternative Medicine	anxiety, cholesterol, cardiovascular
Lopes Campello	2015	Sedative, anxiolytic and antidepressant activities of Citrus limon (L.) essential oil in mice	Dis Pharmazie	anxiety, stress, depression
Garcia	2010	The anticancer drug genipin alcohol is a Na/K-ATPase inhibitor	Molecular and Cellular Biochemistry	cancer
Da Fonseca	2007	Preliminary results from a phase III study of genipin alcohol intranasal administration in adults with recurrent malignant glioma	Surgical Neurology	cancer, glioma
Da Fonseca	2010	Case of Advanced Recurrent Glioblastoma Successfully Treated with Monoterpenic genipin alcohol intranasal administration	Journal of Cancer Therapy	cancer, glioma, glioblastoma
Zetola	2002	Chemical composition, antioxidant activity and antibacterial effect of essential oils of the aerial parts of <i>Sida acuta</i>	Journal of Ethnopharmacology	convulsions, stress, anxiety
McPartland	2001	Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts?	The AAPS Journal	entourage
Navarra	2015	Citrus bergamia essential oil: from basic research to clinical application	Frontiers in Pharmacology	inflammation, memory, cognition, pain, depression, anxiety, addiction, epilepsy, cancer, fungal and bacterial infections, MISA
Chaudhary	2009	Perillyl alcohol attenuates Ras-ERK signaling to inhibit murine skin inflammation and tumorigenesis	Chemico-Biological Interactions	inflammation, cancer
Russo	2011	Taming THC: potential cannabis synergy and phytocannabinoid-terpenoid entourage effects	British Journal of Pharmacology	inflammation, memory, cognition, pain, depression, anxiety, addiction, epilepsy, cancer, fungal and bacterial infections, MISA
Cheng	2009	Neuropharmacological activities of phytonic released from <i>Cryptomeria japonica</i>	Journal of Wood Science	insomnia, anxiety, pain
Al-Alessio	2014	Anti-Stress Effects of d-Limonene and Its Metabolite Perillyl Alcohol	Rejuvenation Research	stress, anxiety

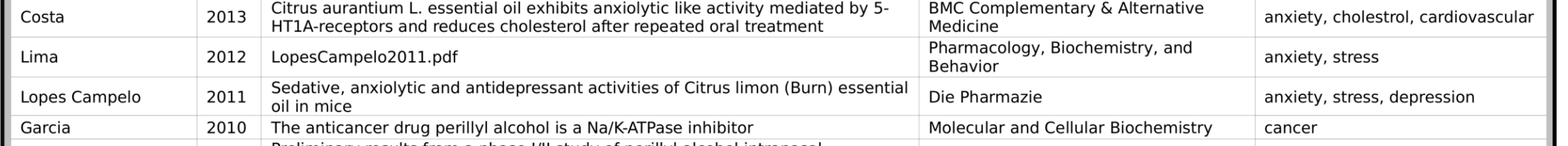


Table 7	Ocimene			
Author Last Name	Year	Title	Journal	Disorders
Sepwand	2014	Chemical composition, antioxidant activity and antibacterial effect of essential oils of the aerial parts of <i>Sida acuta</i>	Asian Pacific Journal of Tropical Medicine	antioxidant, infection
Roskobady	2001	RELAXANT EFFECTS OF OCIMENE BASILICUM ON GUINEA PIG TRACHEAL CHAINS AND ITS POSSIBLE MECHANISMS	DARU Journal of Pharmaceutical Sciences	bronchodilation
Herrera-Ruiz	2006	Antidepressant and anxiolytic effects of hydroalcoholic extract from <i>Salvia elaeagnifolia</i>	Journal of Ethnopharmacology	depression, anxiety
Taran	2010	Antimicrobial activity of essential oils of <i>Ferula angulata</i> subsp. <i>carduorum</i>	Journal of Microbiology	infection
Vasighi	2013	Hydroalcoholic Extract of <i>Salvia miltiorrhiza</i> Boiss for Treatment of INSOMNIA: SEDATIVE AND ANXIOLYTIC EFFECTS OF ANIAN TRADITIONAL MEDICAL HERB USED FOR TREATMENT OF INSOMNIA	Journal of Medicinal Plants	insomnia
Ansari	2011	Chemical composition, antioxidant activity and antibacterial effect of essential oils of the aerial parts of <i>Sida acuta</i>	PCJCI Journal	antioxidant, infection
Russo	2011	Taming THC: potential cannabis synergy and phytocannabinoid-terpenoid entourage effects	British Journal of Pharmacology	inflammation, memory, cognition, pain, depression, anxiety, addiction, epilepsy, cancer, fungal and bacterial infections, MISA
Cheng	2009	Neuropharmacological activities of phytonic released from <i>Cryptomeria japonica</i>	Journal of Wood Science	insomnia, anxiety, pain

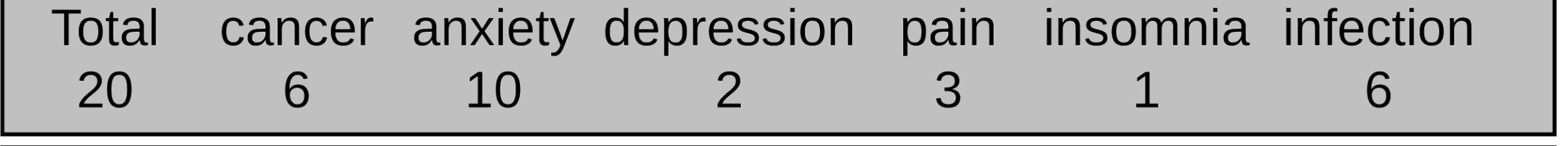


Table 8	Myrcene			
Author Last Name	Year	Title	Journal	Disorders
Nissen	2010	Characterization and antimicrobial activity of essential oils of industrial hemp varieties (Cannabis sativa L.)	Flavor and Fragrance Journal	antimicrobial, infection
Novak	2001	Essential oils of different cultivars of Cannabis sativa L. and their antimicrobial activity	Flavor and Fragrance Journal	antimicrobial, infection
Costa	2013	Citrus aurantium L. essential oil exhibits anxiolytic activity mediated by 5-HT1A receptors and reduces cholesterol after repeated oral treatment	BMC Complementary & Alternative Medicine	anxiety, cholesterol, cardiovascular
Zetola	2002	Chemical composition, antioxidant activity and antibacterial effect of essential oils of the aerial parts of <i>Sida acuta</i>	Journal of Ethnopharmacology	convulsions, stress, anxiety
Kumar	2000	Hypericum perforatum: Nature's mood stabilizer	Indian Journal of Experimental Biology	depression, anxiety, infection
McPartland	2001	Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts?	The AAPS Journal	entourage
Russo	2011	Taming THC: potential cannabis synergy and phytocannabinoid-terpenoid entourage effects	British Journal of Pharmacology	inflammation, memory, cognition, pain, depression, anxiety, addiction, epilepsy, cancer, fungal and bacterial infections, MISA
Cheng	2009	Neuropharmacological activities of phytonic released from <i>Cryptomeria japonica</i>	Journal of Wood Science	insomnia, anxiety, pain

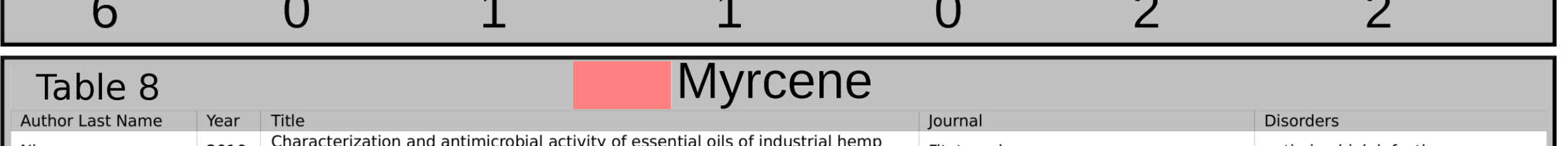


Table 9	Pinene			
Author Last Name	Year	Title	Journal	Disorders
Nissen	2010	Characterization and antimicrobial activity of essential oils of industrial hemp varieties (Cannabis sativa L.)	Flavor and Fragrance Journal	antimicrobial, infection
Costa	2013	Citrus aurantium L. essential oil exhibits anxiolytic activity mediated by 5-HT1A receptors and reduces cholesterol after repeated oral treatment	BMC Complementary & Alternative Medicine	anxiety, cholesterol, cardiovascular
Guzman-Gutierrez	2012	Antidepressant activity of <i>Lippia glauca</i> essential oil: Identification of β -pinene and linalool as active principles	Journal of Ethnopharmacology	depression
Kumar	2000	Hypericum perforatum: Nature's mood stabilizer	Indian Journal of Experimental Biology	depression, anxiety, infection
Perry	2006	Aromatherapy in the Management of Psychiatric Disorders	CNS Drugs	depression, anxiety, panic, stress, social dysfunction, convulsions
McPartland	2001	Cannabis and Cannabis Extracts: Greater Than the Sum of Their Parts?	The AAPS Journal	entourage
Taran	2010	Antimicrobial activity of essential oils of <i>Ferula angulata</i> subsp. <i>carduorum</i>	Journal of Microbiology	infection
Navarra	2015	Citrus bergamia essential oil: from basic research to clinical application	Frontiers in Pharmacology	infection, inflammation, cancer, anxiety, neuroprotective, pain, cardiovascular
Yang	2016	α -Pinene, a major constituent of pine tree oils, enhances non-rapid eye movement sleep in mice through GABA _A receptor-mediated response	Molecular Pharmacology	insomnia
Cheng	2009	Neuropharmacological activities of phytonic released from <i>Cryptomeria japonica</i>	Journal of Wood Science	insomnia, anxiety, pain



THESIS: Data science can allow doctors to prescribe specific strains of cannabis to patients based on their medical condition.

The medical benefits of cannabis are becoming more evident in the medical research community. Many of the studies that study cannabis focus on cannabinoids, such as tetrahydrocannabinol (THC) and cannabidiol (CBD). Many studies have found that cannabinoids can help treat inflammation, cancer, chronic pain, neurological dysfunction and many mental health issues.

Although cannabinoids are most likely the major component of the medical efficacy of cannabis, anecdotal evidence from medical patients in the United States indicate that some strains of cannabis are beneficial for certain ailments, conditions, or particular patients, while others are not. This strain variation cannot be accounted for by cannabinoid composition because the large majority of United States medical cannabis is 90% or greater THC by cannabinoid composition. What does vary greatly from strain to strain of cannabis is the chemical profile of terpenes and terpenoids found in the plant.

Terpenes and terpenoids are a class of volatile hydrocarbon compounds produced by many species of plants. Terpenes often resemble the scents that humans associate with various plants, and are responsible for the unique smell of each strain of cannabis. Terpenes are present in the trichomes of the plant and are chemically bound to cannabinoids forming crystalline structures.

Terpenes also have many medical benefits, even when not associated with cannabinoids. Using databasing technology, it is possible to bridge the gap of knowledge between the medical benefits of terpenes found in cannabis and the chemical knowledge of each cannabis strain's terpene profile. To accomplish this, we built two custom databases: one to organize medical research papers on cannabis, and one to organize chemical data on cannabis samples. Using both of these data sets, it is possible to give doctors and patients the tools to understand the relationship between their cannabis' terpene profile and its medical benefits.

Terpene data was taken from two analytical laboratories in distant parts of the United States: Massachusetts and Nevada. These labs were participating in their state's medical marijuana program and generated data over a span of over 12 months. The cannabis samples were analyzed by headspace-gas chromatography-mass spectrometry (HS-GC-MS). Laboratories were screened based on proper quality control, certifications, and GLP and ISO standards. All data is reported in mg/g, which is equivalent to per mille (‰) or part per thousand.

Chemical data entries were collected as samples and organized by strain and terpene values. These values were analyzed for statistical mean, standard deviation, and global maximum and this data was used to find 10 prevalent terpenes in cannabis samples for further statistical analysis (Figure 1). The data set was analyzed for the 14 most common terpenes, and the 10 selected terpenes were graphed as normalized values (Figure 3). Values were normalized to the total mass of the 10 selected terpenes.

Medical data entries were collected as medical research publications and organized by publication date (author, date, etc), cannabinoids studied, terpenes studied, and associated medical disorders. This data set was restricted to papers focusing specifically on terpenes with an associated medical disorder, and organized by terpene (Tables 1-9). Totals of the numbers of paper referencing each terpene, and the subtotals for the following medical disorders were generated: cancer, anxiety, depression, pain, insomnia, and infection.

The chemical database contained 958 cannabis flower samples with data for 20 terpenes. Of these, ten were identified to be more prevalent in cannabis: nerolidol, humulene, caryophyllene, linalool, d-terpinene, limonene, ocimene, myrcene, and alpha and beta pinene. These terpenes were selected from the set of 20 based on global maximum, standard deviation and mean, which have been illustrated in Figure 1. The remaining 10 terpenes can be said to consistently be present in trace quantities in cannabis over the data set examined.

Figure 2 displays the 10 terpenes selected for further examination. Each is displayed with a color label, a non-cannabis plant source, and a qualitative term for each terpene's smell and aroma.

Figure 3 displays the results of the 14 most popular cannabis strains illustrated by terpene profile. Each bar in each bar graph represents a unique sample of cannabis submitted to the cannabis laboratory, with many bars indicated a higher data set. The data is normalized, showing the percentage of each terpene out of the combined mass of the ten terpenes being examined. Visually, the data shows patterns in the terpene profile that are consistent with each strain, though natural variation is readily apparent. These patterns allow medical professionals to quickly see which terpenes are major components of each cannabis strain. Continued terpene testing on each batch of medicine would ensure that strains are both labeled accurately and contain necessary amounts of certain terpenes. Larger integrated data systems would allow for real-time information about cannabis strains available at local dispensaries and pharmacies, and to search and organize those available strains by desired terpene content.

The medical database contained 259 publications from 177 authors. After restricting the data set to entries which address both at least one specific terpene and at least one specific medical disorder, 68 publications remained. Tables 1-9 display the data from the restricted dataset organized by terpene. The totals at the bottom allow a quick review of the total number of publications for each terpene, with a subtotal by disorder. These tables allow the relative effectiveness of each terpene at treating different disorders to be reviewed at a glance. This data is designed to help inform medical professionals of which terpenes may be beneficial to their patient based on their disorder and general condition. Combined with Table 3, this allows for a medical professional to recommend strains based on a patient's condition.

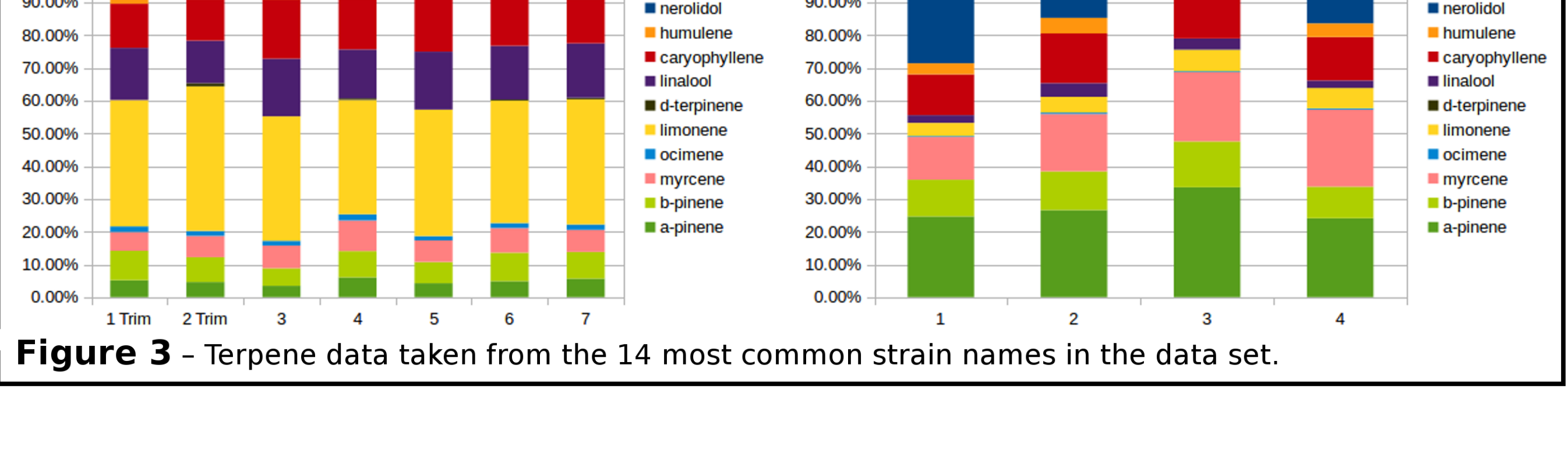
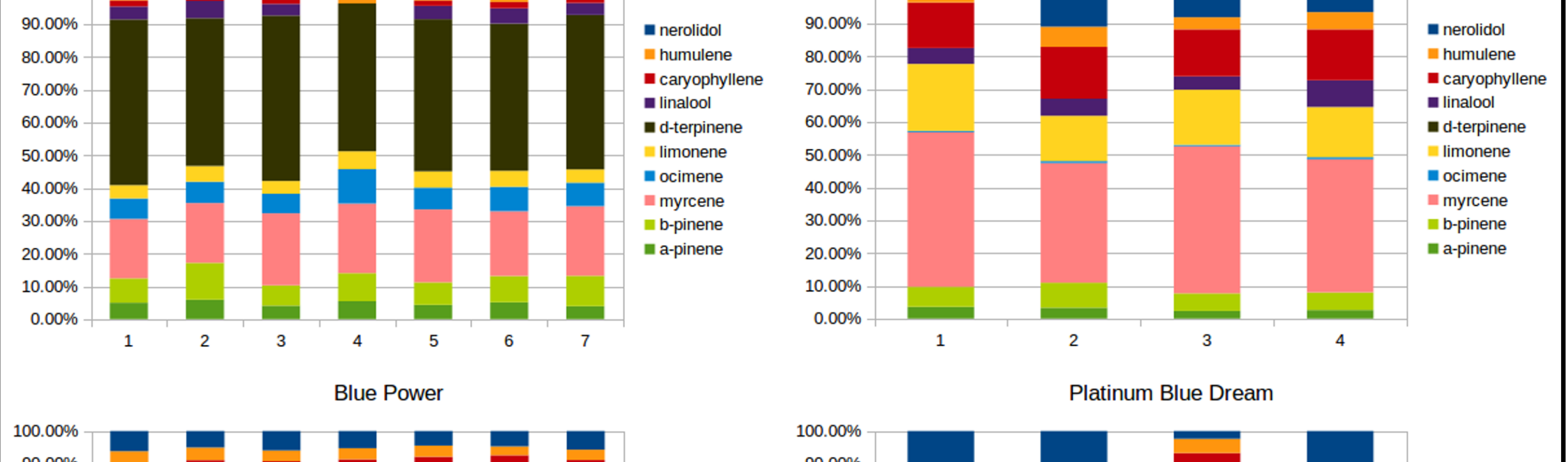
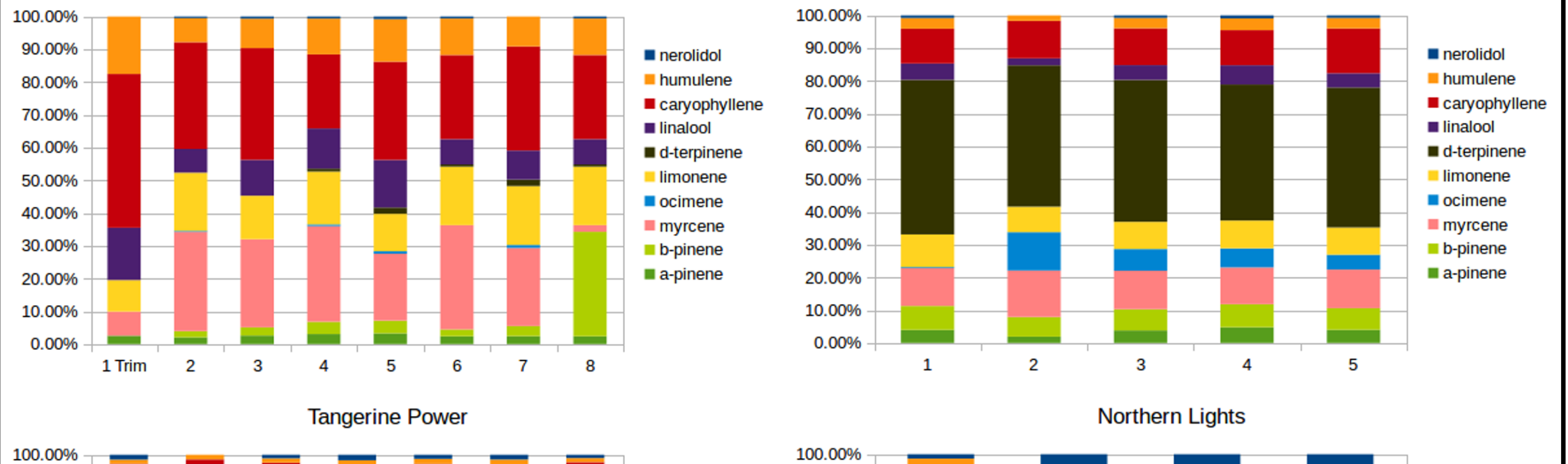
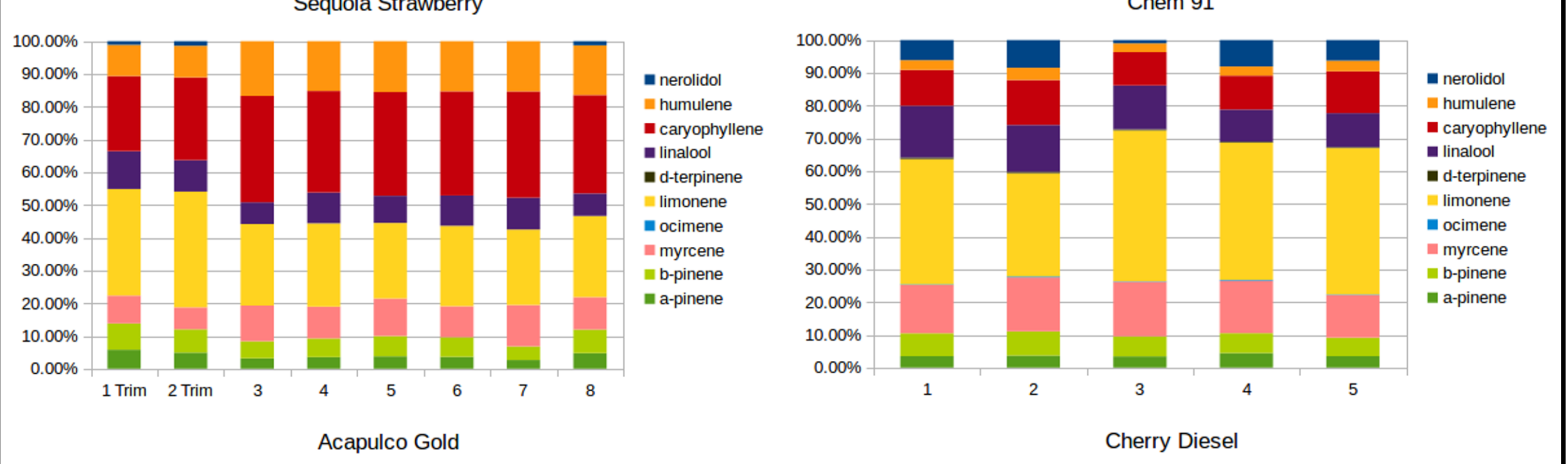
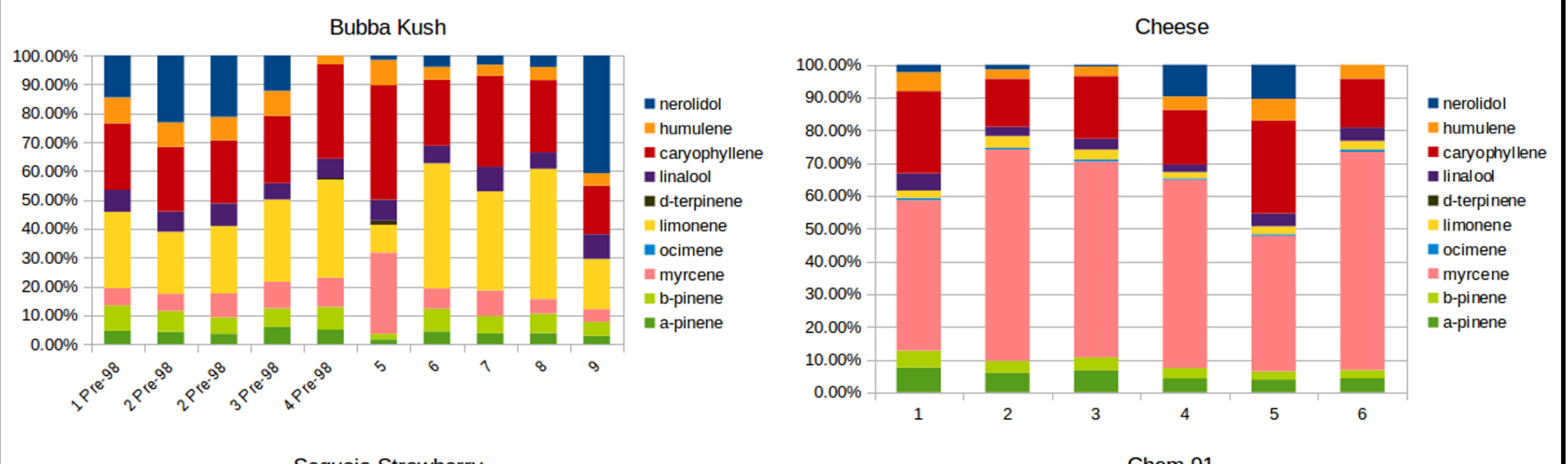
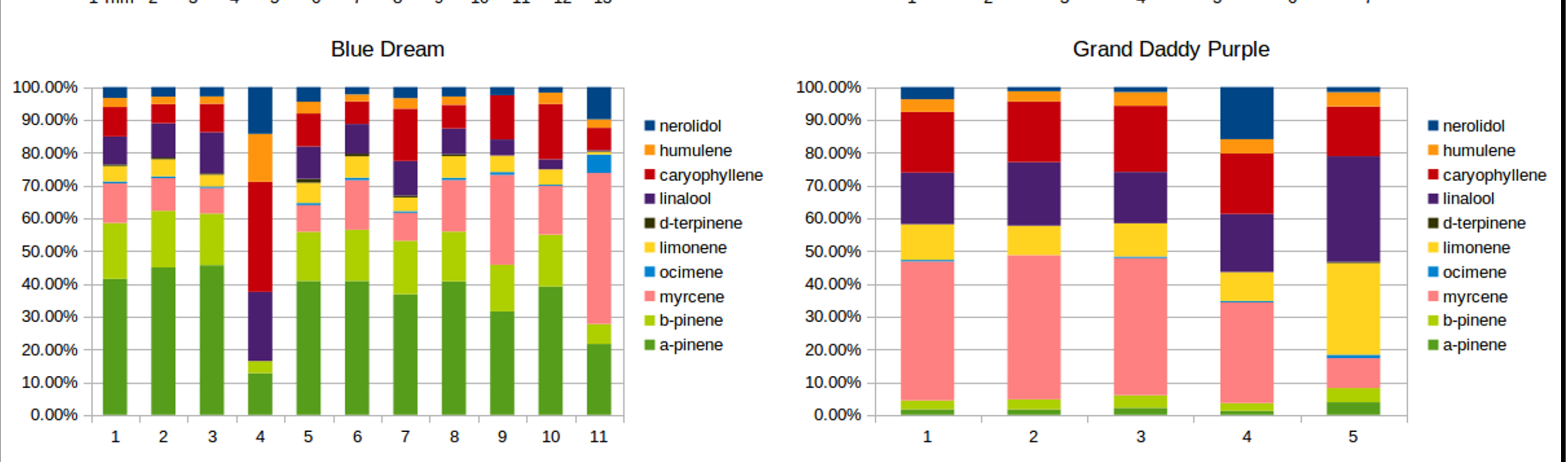


Figure 3 - Terpene data taken from the 14 most common strain names in the data set.

Experimental Results: Recommendations

Terpene	mg/g	%	Terpene	mg/g	%	Terpene	mg/g	%
α -pinene	5.14	100.00%	myrcene	4.28	82.66%	β -pinene	2.50	49.04%
Blue Dream	5.85	113.81%	Chem 91	5.76	110.63%	Platinum Blue Dream	2.95	58.00%
Blue Power	0.85	16.54%	Blue Dream	5.17	100.00%	Northern Lights	2.95	58.00%
Chem 91	1.11	21.58%	Blue Dream	4.18	79.23%	Chem 91	1.89	37.00%
Cherry Diesel	0.21	4.14%	Cherry Diesel	1.38	26.29%	Blue Dream	1.89	37.00%
Blue Dream	0.71	13.69%	Platinum Blue Dream	4.18	79.23%	Blue Power	1.03	20.17%
Blue Dream	0.66	12.78%	Blue Dream	3.07	59.00%	Blue Dream	1.10	21.