

Dr. Duke's Phytochemical and Ethnobotanical Databases

Chemicals and their Biological Activities in: *Citrus aurantiifolia* (CHRISTM.) SWINGLE (Rutaceae) -- Lime

Chemicals

1,4-CINEOLE *Fruit* 180 ppm;
No activity reported.

1,8-CINEOLE *Fruit* 70 ppm;
(-)-Chronotropic 87 nl/ml; (-)-Inotropic; Acaricide $LC_{100}=6\ \mu M$; Allelopathic; Allergenic; Anesthetic; Anthelmintic; Antiacetylcholinesterase $IC_{50}=41\ \mu g/ml$; Antiallergic; Antibacterial 50 ppm; Antibronchitic; Anticariogenic; Anticatarrh; Anticholinesterase $IC_{50}=50-70$; Antifatigue; Antihalitosis; Antiinflammatory; Antilaryngitic; Antinociceptive; Antipharyngitic; Antiplateau; Antirheumatic; Antirhinitic; Antiseptic; Antisinusitic; Antispasmodic; Antistaphylococcic 50 ppm; Antitussive; Antiulcer; Candidicide; Carcinogenic; Choleric; CNS-Stimulant; Convulsant; Counterirritant; Cytochrome-P450-Inducer; Decongestant; Degranulant 0.3 ul/ml; Dentifrice; Edemagenic inj; Expectorant; FLavor FEMA 1-200; Fungicide; Gastroprotective; Gram(+)-icide; Gram(-)-icide; Hepatotonic; Herbicide $IC_{50}=78\ \mu M$; Hypotensive; Inflammatory inj; Insectifuge; Irritant; Myorelaxant; Nematicide; Neurotoxic; P450-Inducer; Pediculicide 2.3 x pyrethrin; Perfume; Pesticide; Rubefacient; Secretagogue; Sedative; Spasmogenic; Surfactant; Testosterone-Hydroxylase-Inducer; Transdermal; Trichomonicide $LD_{100}=1,000\ \mu g/ml$

2,2-DIMETHYL-5(-1)-METHYL-1-PROPENYL)TETRA-HYDROFURAN *Plant* 30 ppm;
No activity reported.

2,6,6-TRIMETHYL-2-VINYLTETRAHYDROPYRAN *Fruit* 16 ppm;
No activity reported.

5-METHOXY-PSORALEN *Fruit*:
Antimutagenic; Antipsoriatic; Antitumor; Antiviral; Cancer-Preventive; Carcinogenic?; Fungicide; Melaninogenic; Melatoninogenic; Photodermatitogenic

ALPHA,ALPHA-P-TRIMETHYLBENZYL-ALCOHOL *Fruit* 60 ppm;
No activity reported.

ALPHA-ALPHA-P-TRIMETHYL-BENZYL *Plant*:
No activity reported.

ALPHA-BERGAMOTENE *Fruit* 50 - 250 ppm

No activity reported.

ALPHA-BISABOLENE Fruit 250 - 400 ppm

No activity reported.

ALPHA-LINOLENIC-ACID Fruit 190 - 1,615 ppm

5-Alpha-Reductase-Inhibitor; Antiaggregant; Antihypertensive; Antiinflammatory $IC_{50}=42 \mu M$; Antileukotriene-D4; Antimenorrhagic; Antimetastatic; Antiprostatic; Cancer-Preventive; Hypotensive; Immunostimulant 0.12 ml/man/day ; Lymphocytogenic 0.5 ug/ml ; Propepic; Prostaglandin-Synthesis-Inhibitor 39.5 g/day/hmn ; Vasodilator

ALPHA-P-DIMETHYL-STYRENE Fruit 50 ppm;

No activity reported.

ALPHA-PHELLANDRENE Fruit 20 ppm;

Antibacterial; Antistaphylococcic; Dermal; Emetic; FLavor *FEMA 10-130*; Fungicide; Insectiphile; Irritant; Laxative; Perfumery; Pesticide

ALPHA-PINENE Fruit 80 - 240 ppm

Allelochemic; Allergenic; Antiacne; Antibacterial; Antifeedant; Antiflu; Antiinflammatory 500 mg/kg ; Antipneumonic; Antiseptic; Antispasmodic; Antistaphylococcic; Antiviral; Cancer-Preventive; Coleoptophile; Expectorant; FLavor *FEMA 15-150*; Herbicide $IC_{50}=30 \mu M$; Insecticide $0.82 \mu M/fly$; Insectifuge 50 ppm ; Insectiphile; Irritant; P450-2B1-Inhibitor $IC_{50}=0.087 \mu M$; Perfumery; Pesticide; Sedative; Spasmodic; Tranquilizer; Transdermal

ALPHA-TERPINENE Fruit 80 ppm;

Acaricide; ACE-Inhibitor 100 ug/ml (*weak activity*); Aldose-Reductase-Inhibitor 100 ug/ml ; Antiacetylcholinesterase $IC_{50}=1.0 \text{ mM}$; Antinitrosaminic; Antispasmodic; FLavor *FEMA 1-40*; Insecticide $0.86 \mu M/fly$; Insectifuge; P450-2B1-Inhibitor $IC_{50}=0.76 \mu M$; Perfumery; Pesticide; Spasmodic

ALPHA-TERPINEOL Fruit 30 - 590 ppm

ACE-Inhibitor 100 ug/ml (*weak activity*); Aldose-Reductase-Inhibitor 100 ug/ml ; Allelopathic; Antiacne; Antibacterial $MIC=800-1,600 \text{ ug/ml}$; Anticancer; Anticariogenic; Antiinflammatory; Antiproliferant; Antiseptic; Cicatrizant $ED_{50}=240 \text{ ug/g mus}$; FLavor *FEMA 5-40*; Insecticide $1.29 \mu M/fly$; Interleukin-6-Inhibitor; Mosquitofuge > *Deet*; Motor-Depressant; Nematicide $MLC=1 \text{ mg/ml}$; Perfumery; Pesticide; Sedative; Termiticide $IC_{100}=5 \text{ mg/g}$; Transdermal; Vulnerary $ED_{50}=240 \text{ ug/g mus}$

ALPHA-THUJENE Fruit 40 ppm;

No activity reported.

BERGAMOTTIN Fruit:

Calcium-Antagonist 20 ug/ml gpg ; Cytochrome-P450-Inhibitor

BERGAPTEN Fruit:

Antiaggregant; Antiapertif; Anticonvulsant; Antihistaminic 25 mg/kg ipr mus ; Antiinflammatory; Antijet-lag; Antileukodermic; Antimitotic $5-25 \text{ ug/ml}$; Antiplatelet; Antipsoriac; Antispasmodic; Antitumor; Calcium-Antagonist; Cancer-Preventive; Carcinogenic; Clastogenic; CNS-Depressant; DME-Inhibitor $IC_{50}=96 \mu M$;

Hypotensive; Insecticide; Lipolytic; Molluscicide; Mutagenic; Pesticide; Phototoxic; Piscicide

BETA-BISABOLENE Fruit 90 ppm;

Abortifacient; Antirhinoviral $IC_{50}=1,800?$; Antiulcer $IC_{57}=100\text{ mg/kg}$; Antiviral $IC_{50}=1,800?$; Perfumery; Stomachic

BETA-PHELLANDRENE Fruit 90 ppm;

Expectorant; Fungicide; Perfumery

BETA-PINENE Fruit 90 - 1,190 ppm

Allergenic; Antiinflammatory; Antiseptic; Antispasmodic; Candidicide; FLavor *FEMA* 15-600; Herbicide; Insectifuge; Irritant; Perfumery; Pesticide; Spasmogenic; Transdermal

BETA-TERPINEOL Fruit 70 ppm;

Insectifuge; Perfumery; Pesticide

BORNEOL Fruit 60 ppm;

(-)-Chronotropic 29 ug/ml ; (-)-Inotropic; Allelochemic; Analgesic; Antiacetylcholine; Antibacterial $MIC=125-250\text{ ug/ml}$; Antibronchitic; Antiescherichic $MIC=125\text{ ug/ml}$; Antifeedant; Antiinflammatory; Antiotitic; Antipyretic; Antisalmonella; Antispasmodic $ED_{50}=0.008\text{ mg/ml}$; Antistaphylococcic $MIC=250\text{ ug/ml}$; Antiyeast; Candidicide; Choleric; CNS-Stimulant; CNS-Toxic; FLavor *FEMA* <1; Fungicide; Hepatoprotective; Herbicide $IC_{50}=470\text{ mM}$ $IC_{50}=470\text{ uM}$; Inhalant; Insect-Repellent; Insectifuge; Irritant; Myorelaxant; Nematicide $MLC=1\text{ mg/ml}$; Perfumery; Pesticide; Sedative; Tranquilizer

CAMPHENE Fruit 50 - 80 ppm

Allelopathic; Antilithic?; Antioxidant; Expectorant; FLavor *FEMA* 15-175; Hypocholesterolemic?; Insectifuge; Pesticide; Spasmogenic

CARYOPHYLLENE Fruit 30 - 250 ppm

Aldose-Reductase-Inhibitor; Allergenic; Analgesic; Antiacne; Antiasthmatic; Antibacterial; Anticariogenic $MIC=>1,600\text{ ug/ml}$; Antidermatitic; Antiedemic; Antifeedant 500 ppm ; Antiinflammatory $IC_{50}=100\text{ uM}$; Antileishmanic; Antionychyotic; Antiproliferant; Antispasmodic; Antistaphylococcic; Antistreptococcic; Antitumor; Antiulcer; Candidicide; FLavor *FEMA* 20-200; Fungicide; Gastroprotective; Insectifuge; Irritant; Larvicide; Mosquitocide; Perfumery; Pesticide; Sedative; Termitifuge

CITRONELLAL Fruit 140 ppm;

Acaricide; Allergenic; Antibacterial; Antiseptic 3.8 x phenol ; Antistaphylococcic; Antistreptococcic; Candidicide; Embryotoxic; FLavor *FEMA* <1; Fungicide; Insectifuge; Irritant; Motor-Depressant; Mutagenic?; Nematicide $MIC\ 1\text{ mg/ml}$; P450-2B1-Inhibitor $IC_{50}=1.56\text{ uM}$; Perfumery; Pesticide; Sedative $ED=1\text{ mg/kg}$; Teratogenic

DECANAL Fruit 9 - 10 ppm

No activity reported.

DECANOL Fruit 6 ppm;

Nematicide $MLC\ 100-700\text{ ug/ml}$; Pesticide

DECYL-ACETATE Fruit 10 ppm;
FLavor FEMA <1-1

DIMETHOXYCOUMARIN Fruit:
No activity reported.

DODECANAL Fruit 1 ppm;
FLavor FEMA 1-100; Irritant

FENCHOL Fruit 120 ppm;
No activity reported.

FOLUENE Plant:
No activity reported.

FURFURAL Fruit 1 ppm;
Antiseptic; FLavor FEMA 1-30; Fungicide; Insecticide; Irritant; Pesticide

GAMMA-SELINENE Fruit 20 ppm;
No activity reported.

GAMMA-TERPINENE Fruit 60 - 2,170 ppm
Acaricide; ACE-Inhibitor 100 ug/ml (*weak activity*); Aldose-Reductase-Inhibitor 100 ug/ml; Acetylcholinesterase IC₂₃=1.2 mM; Antifeedant; Antioxidant; FLavor FEMA 1-40; Insectifuge; Irritant; Perfumery; Pesticide

GERANIAL Fruit 10 - 680 ppm
Antibacterial; AntiEBV IC₅₀=16 uM; Antiviral; Pesticide

GERANYL-ACETATE Fruit 30 - 310 ppm
Allergenic; FLavor FEMA 1-20; Insectiphile; Perfumery; Sedative

ISOIMPERATORIN Fruit:
Antitumor-Promoter IC₉₄=50 ug/ml; Artemicide ED₅₀=6->100 ug/ml; Calcium-Antagonist; Cytochrome-P450-Inhibitor 2 nM; Cytotoxic (Breast) ED₅₀=6.56 ug/ml; Cytotoxic (Colon) ED₅₀=>10 ug/ml; DME-Inhibitor IC₅₀=46 uM; Pesticide

ISOPIMPINELLIN Fruit:
Antiappetant; Antifeedant; Antiinflammatory 100 ppm; Antilipogenic; Antimitotic 5-25 ug/ml; Antitubercular; Calcium-Antagonist; Cancer-Preventive; Diuretic 125 mg/kg; Fungicide; Insecticide; Molluscicide; Mutagenic; Pesticide; Piscicide

LIMONENE Fruit 4,700 - 7,500 ppm
Acaricide LC₁₀₀=8 uM; AChE-Inhibitor; Allelochemic; Allergenic 1/20th carene; Acetylcholinesterase IC₂₂₋₂₆=1.2 mM; Antiadenomic; Antialzheimeran?; Antiasthmatic; Antibacterial; Anticancer; Antiesophagitic; Antifeedant; Antiflu; Antiinflammatory; Antilithic; Antilymphomic; Antimetastatic (Stomach); Antimutagenic; Antiobesity; Antiseptic; Antispasmodic ED₅₀=0.197 mg/ml; Antitumor; Antitumor (Breast); Antitumor (Colon); Antitumor (Pancreas); Antitumor (Prostate); Antitumor (Stomach); Antiviral; Apoptotic; Bronchoprotectant; Cancer-Preventive; Candidistat; Chemopreventive; Cholesterolytic; Detoxicant; Enterocontractant; Expectorant; FLavor; Fungiphilic; Fungistat; GST-Inducer; Herbicide IC₅₀=45 uM;

Histaminic; Immunomodulator; Insecticide $0.37 \mu\text{M}/\text{fly}$; Insectifuge; Interleukin-6-Inhibitor; Irritant; Lipolytic; Myorelaxant $50 \text{ mg}/\text{kg}$; Nematicide $IC=100 \mu\text{g}/\text{ml}$; NO-Genic; Ornithine-Decarboxylase-Inhibitor $\sim 750 \text{ mg}/\text{kg}$ (diet); Ozone-Scavenger; P450-Inducer; Peristaltic; Pesticide; Photosensitizer; Sedative $ED=1-32 \text{ mg}/\text{kg}$; Transdermal

LINALOL Fruit 9 - 20 ppm

No activity reported.

MALIC-ACID Fruit 2,000 ppm;

Antiatherosclerotic; Antibacterial; Antifibromyalgic $300 \text{ mg } 3\text{x}/\text{day}$; Antioxidant Synergist; Antiseborrheic; Antiseptic; Antitubercular; Antitumor; Bacteristat; Bruchiphobe; Hemopoietic; Laxative?; Mycobactericide; Pesticide; Sialogogue

MALONIC-ACID Fruit:

Irritant

METHYL-HEPTENONE Fruit 1 ppm;

No activity reported.

MYRCENE Fruit 70 - 1,030 ppm

ACE-Inhibitor $100 \mu\text{g}/\text{ml}$; Aldose-Reductase-Inhibitor; Allergenic; Analgesic; Antibacterial; Anticonvulsant; Antimutagenic; Antinitrosaminic; Antinociceptive $10-20 \text{ mg}/\text{kg } ipr \text{ mus } 20-40 \text{ mg}/\text{kg } scu \text{ mus}$; Antioxidant; Antispasmodic; Chemopreventive; FLavor *FEMA* 0.5-9; Fungicide; Hypothermic; Insectifuge; Irritant; Myorelaxant $100-200 \text{ mg}/\text{kg}$; P450-2B1-Inhibitor $IC_{50}=0.14 \mu\text{M}$; Perfumery; Pesticide

NERAL Fruit 40 - 460 ppm

Antibacterial; Antispasmodic; Pesticide; Termiticide $LD_{100}=5 \text{ mg}/\text{g}$

NERYL-ACETATE Fruit 1 - 310 ppm

Antiflu; Antiviral; FLavor *FEMA* 1-15; Perfumery; Pesticide

NERYL-FORMATE Fruit 20 ppm;

FLavor *FEMA* 5-15; Perfumery

NONANAL Fruit 20 ppm;

No activity reported.

NONANE Fruit 6 ppm;

No activity reported.

NONANOL Fruit 1 - 10 ppm

No activity reported.

NOOTKATONE Fruit 1 ppm;

Antiulcer $20 \text{ mg}/\text{kg } orl \text{ rat}$; FLavor *FEMA* 3-50; Perfumery

OCTANAL Fruit 30 - 80 ppm

No activity reported.

OCTANOIC-ACID Fruit 2 ppm;

Candidicide; FLavor *FEMA* 3-20; Fungicide; Perfumery; Pesticide

OCTANOL *Fruit* 1 ppm;

No activity reported.

OXALIC-ACID *Fruit*:

Acaricide; Antiseptic; CNS-Paralytic; Fatal; Hemostatic; Irritant; Pesticide; Renotoxic; Varroacide

P-CYMENE *Fruit* 50 - 1,160 ppm

Analgesic; Antiacetylcholinesterase $IC_{40}=1.2\text{ mM}$; Antibacillary; Antibacterial; Antiflu; Antirheumatalgic; Antiviral; FLavor *FEMA* 12-250; Fungicide; Herbicide $IC_{50}=50\text{ uM}$; Insectifuge; Irritant; Laxative; Pesticide; Sedative; Trichomonicide $LD_{100}=50\text{ ug/ml}$

PERILLALDEHYDE *Fruit*:

Acaricide; Antibacterial $MIC=500->1,000\text{ ug/ml}$; Antimelanomic $IC_{50}=120\text{ uM/l}$; Antiproliferative; Antiseptic; Candidicide $MIC=500\text{ ug/ml}$; Fungicide $MIC=250-500\text{ ug/ml}$; Mutagenic; Nematicide $MLC=1\text{ mg/ml}$; Sedative; Vibriocide 250 ug/ml

PHLOBOTANNIN *Fruit*:

No activity reported.

POLYHYDROXYPHLOBAN *Fruit*:

No activity reported.

QUINIC-ACID *Fruit*:

Choleretic

SABINENE *Fruit* 160 ppm;

Antibacterial; Antihelicobacter; Antiseptic; Antiulcer; Perfumery

SUGARS *Fruit* 17,400 ppm;

No activity reported.

TERPINEN-1-OL *Fruit* 70 ppm;

No activity reported.

TERPINEN-4-OL *Fruit* 166 ppm;

Allelopathic; Antiacetylcholinesterase $IC_{21-24}=1.2\text{ mM}$; Antiacne; Antiallergic; Antiasthmatic; Antibacterial; Antioxidant; Antiseptic; Antispasmodic; Antitussive; Antiulcer; Bacteriostatic; Diuretic 0.1 ml/rat ; Fungicide; Herbicide $IC_{50}=200\text{ mM}$ $IC_{50}=22\text{ uM}$; Insectifuge; Irritant; Nematicide $MLC=1\text{ mg/ml}$; Pesticide; Renoirritant; Spermicide $ED_{100}=0.015$; Vulnerary

TERPINOLENE *Fruit* 60 - 120 ppm

Allelochemic; Antifeedant; Antinitrosaminic; Antioxidant; Deodorant; FLavor *FEMA* 15-60; Fungicide; Perfumery; Pesticide

THYMYL-METHYL-ETHER *Fruit* 2 ppm;

No activity reported.

TRIDECANE *Fruit* 2 ppm;

No activity reported.

UNDECANE *Fruit* 3 ppm;
No activity reported.

XANTHYLETIN *Plant*:
DME-Inhibitor $IC_{50}=57.5 \mu M$