

# List of All Chemicals

## **P** Thymus x citriodorus (Lamiaceae)

### Common name(s)

Funk's thyme; Lemon Thyme

### How used

Medicinal

\*Unless otherwise noted all references are to Duke, James A. 1992. Handbook of phytochemical constituents of GRAS herbs and other economic plants. Boca Raton, FL. CRC Press.

Chemical	Part <input type="button" value="All"/>	Low PPM	High PPM	StdDev	*Reference
1,8-CINEOLE	Plant	--	50.0	-0.55	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. <i>Flav. &amp; Fragr. J.</i> 10: 225-229.

#### Activities (67)

(-)-Chronotropic 87 nl/ml	Hansel, R., Keller, K., Rimpler, H., and Schneider, G. eds. 1992. Hager's Handbuch der Pharmazeutischen Praxis, Drogen (A-D), 1209 pp., 1993 (E-O), 970 pp., 1994 (P-Z), 1196 pp. Springer-Verlag, Berlin.
(-)-Inotropic 87 nl/ml	Hansel, R., Keller, K., Rimpler, H., and Schneider, G. eds. 1992. Hager's Handbuch der Pharmazeutischen Praxis, Drogen (A-D), 1209 pp., 1993 (E-O), 970 pp., 1994 (P-Z), 1196 pp. Springer-Verlag, Berlin.
Acaricide LC100=6 uM	
Allelopathic	
Allergenic	
Anesthetic	
Anthelmintic	Jeffery B. Harborne and H. Baxter, eds. 1983. <i>Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants.</i> Taylor & Frost, London. 791 pp.
Antiacetylcholinesterase IC50=41 ug/ml	
Antiallergic	J. Food Hyg. Soc. Jap. 33(6): 569.
Antibacterial 50 ppm	
Antibronchitic	
Anticariogenic	
Anticatarrh	Martindale's 29th
Anticholinesterase IC50=50-70	
Antifatigue	
Antihalitosis	American Health, 12(4): 17, 1993.
Antiinflammatory	
Antilaryngitic	
Antinociceptive	
Antipharyngitic	
Antiplaque	
Antirheumatic	
Antirhinitic	
Antiseptic	Jeffery B. Harborne and H. Baxter, eds. 1983. <i>Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants.</i> Taylor & Frost, London. 791 pp.
Antisinusitic	
Antispasmodic	
Antistaphylococcic 50 ppm	
Antitussive	
Antiulcer	
CNS-Stimulant	
Candidicide	
Carcinogenic	Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. <i>Compendium of Safety Data Sheets for Research and Industrial Chemicals.</i> VCH Publishers, New York. 3560-4253.
Choleretic	
Convulsant	
Counterirritant	Martindale's 29th
Cytochrome-P450-Inducer	
Decongestant	
Degranulant 0.3 ul/ml	
Dentifrice	Martindale's 29th

Edemagenic inj	
Expectorant	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
FLavor FEMA 1-200	Aloe Research Council - Duke writeup of non-peer reviewed book by Coats and draft by Henry
Fungicide	
Gastroprotective	
Gram(+)icide	
Gram(-)icide	
Hepatotonic	
Herbicide IC50=78 uM	Keeler, R.F. and Tu, A.T. eds. 1991. Toxicology of Plant and Fungal Compounds. (Handbook of Natural Toxins Vol. 6) Marcel Dekker, Inc. NY. 665 pp.
Hypotensive	
Inflammatory inj	
Insectifuge	
Irritant	Rinzler, C. A. 1990. The Complete Book of Herbs, Spices and Condiments. Facts on File, New York. 199 pp.
Myorelaxant	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
Nematicide	Nigg, H.N. and Seigler, D.S., eds. 1992. Phytochemical Resources for Medicine and Agriculture. Plenum Press, New York. 445 pp.
Neurotoxic	
P450-Inducer	
Pediculicide 2.3 x pyrethrin	
Perfume	Aloe Research Council - Duke writeup of non-peer reviewed book by Coats and draft by Henry
Pesticide	
Rubefacient	Martindale's 29th
Secretagogue	
Sedative	
Spasmogenic	
Surfactant	
Testosterone-Hydroxylase-Inducer	
Transdermal	
Trichomonicide LD100=1,000 ug/ml	

6-METHYL-HEPTAN-3-ONE	Plant	--	270.0		Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. <i>Flav. &amp; Fragr. J.</i> 10: 225-229.
ALLO-AROMADENDRENE	Shoot	--	21.0	-0.16	Vila, R., et al. 1995. Composition and study of the variability of the essential oil of <i>Thymus funkii</i> Cousson. <i>Flav. &amp; Fragr. J.</i> 10(6): 379-383.
ALPHA-PINENE	Plant	--	50.0	-0.45	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. <i>Flav. &amp; Fragr. J.</i> 10: 225-229.

**Activities (28)**

Allelochemic	
Allergenic	
Antiacne	
Antibacterial	
Antifeedant	
Antiflu	Economic & Medicinal Plant Research, 5: 195.
Antiinflammatory 500 mg/kg	
Antipneumonic	
Antiseptic	
Antispasmodic	
Antistaphylococcic	
Antiviral	Economic & Medicinal Plant Research, 5: 195.
Cancer-Preventive	Stitt, P. A. Why George Should Eat Broccoli. Dougherty Co, Milwaukee, WI, 1990, 399 pp.
Coleoptophile	
Expectorant	Michael Castleman 1991. The Healing Herbs. Rodale Press, Emmaus, PA 436 pp.
FLavor FEMA 15-150	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Herbicide IC50=30 uM	Keeler, R.F. and Tu, A.T. eds. 1991. Toxicology of Plant and Fungal Compounds. (Handbook of Natural Toxins Vol. 6) Marcel Dekker, Inc. NY. 665 pp.
Insecticide 0.82 uM/fly	
Insectifuge 50 ppm	
Insectiphile	J. Stored. Prod. Res., 22:141, 1986.
Irritant	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
P450-2B1-Inhibitor IC50=0.087 uM	
Perfumery	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Pesticide	
Sedative	Lawrence Review of Natural Products, Jun-90.
Spasmogenic	
Tranquilizer	Lawrence Review of Natural Products, Jun-90.
Transdermal	

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ALPHA-TERPINEOL    Plant    --    220.0    -0.31    Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, *Thymus x citriodorus* (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.

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**Activities (23)**

ACE-Inhibitor 100 ug/ml (weak activity)	
Aldehyde-Reductase-Inhibitor 100 ug/ml	Okamura, K., Iwakami, S., Matsunaga, T. 1992. Biological Activity of Monoterpenes from Trees. Toyama-Ken Yakuji Kenkyusho Nenpo, (20): 95-101.
Allelopathic	Wright, C.W. (Ed) 2002. Medicinal & Aromatic Plants - Industrial Profiles. Artemisia. 344pp. Maffei, M. (Ed) 2002. Vetiveria. The Genus Vetiveria. Taylor & Francis. NY, NY. 191pp. Southwell, J.L., Lowe, R. (Eds) 1999. Tea Tree. The Genus Melaleuca. Harwood Acad. Pub. Amsterdam, Netherlands.
Antiacne	
Antibacterial MIC=800-1,600 ug/ml	Muroi, H. and Kubo, I. 1993. Combination Effects of Antibacterial Compounds in Green Tea Flavor against Streptococcus mutans. J. Agric. Food Chem. 41: 1102-1105.
Anticancer	Joseph, J., Nadeau, D. and Underwood, A. 2001. The Color Code. Hyperion, NY.
Anticariogenic MIC=800-1,600 ug/ml	Muroi, H. and Kubo, I. 1993. Combination Effects of Antibacterial Compounds in Green Tea Flavor against Streptococcus mutans. J. Agric. Food Chem. 41: 1102-1105.
Antiinflammatory	
Antiproliferant	
Antiseptic	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
Cicatrizant ED50=240 ug/mus	
FLavor FEMA 5-40	Aloe Research Council - Duke writeup of non-peer reviewed book by Coats and draft by Henry
Insecticide 1.29 uM/fly	
Interleukin-6-Inhibitor	
Mosquitofuge > Deet	
Motor-Depressant	Buchbauer et al, e.g. Buchbauer et al, 1993. Therapeutic properties of essential oils and fragrances. Chap. 12 in Teranishi, R., Buttery, R.G. and Sugisawa, H. Eds. Bioactive Volatile Compounds from Plants. ACS Symposium Series 525. Amer. Chem. Soc., Washington DC
Nematicide MLC=1 mg/ml	Shoyakugaku Zasshi, 44: 183.
Perfumery	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
Pesticide	
Sedative	Buchbauer et al, e.g. Buchbauer et al, 1993. Therapeutic properties of essential oils and fragrances. Chap. 12 in Teranishi, R., Buttery, R.G. and Sugisawa, H. Eds. Bioactive Volatile Compounds from Plants. ACS Symposium Series 525. Amer. Chem. Soc., Washington DC
Termiticide IC100=5 mg/g	
Transdermal	
Vulnerary ED50=240 ug/mus	

BETA-BISABOLENE	Plant	--	130.0	-0.17	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, Thymus x citriodorus (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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**Activities (6)**

Abortifacient	
Antirhinoviral IC50=1,800?	Denyer, C.V., Jackson, P., Loakes, D.M., Ellis, M.R., and Yound, D.A.B. Isolation of Antirhinoviral Sesquiterpenes From Ginger (Zingiber officinale). Journal of Natural Products, 57(5): 658-662, 1994.
Antiulcer IC57=100 mg/kg	Yamahara, J., et al. Stomachic principles in ginger. II. Pungent and anti-ulcer effects of low polar constituents isolated from ginger, the dried rhizoma of... Yakugaku Zasshi 112: 645-655 (1992).
Antiviral IC50=1,800?	Denyer, C.V., Jackson, P., Loakes, D.M., Ellis, M.R., and Yound, D.A.B. Isolation of Antirhinoviral Sesquiterpenes From Ginger (Zingiber officinale). Journal of Natural Products, 57(5): 658-662, 1994.
Perfumery	Aloe Research Council - Duke writeup of non-peer reviewed book by Coats and draft by Henry
Stomachic	

BETA-BOURBONENE	Plant	--	20.0	-0.37	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, Thymus x citriodorus (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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BETA-CARYOPHYLLENE	Plant	--	370.0	-0.36	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, Thymus x citriodorus (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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BETA-CARYOPHYLLENE-EPOXIDE	Plant	--	30.0		Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, Thymus x citriodorus (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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BETA-PINENE	Plant	--	10.0	-0.42	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, Thymus x citriodorus (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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**Activities (13)**

Allergenic	
Antiinflammatory	
Antiseptic	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Antispasmodic	
Candidicide	
FLavor FEMA 15-600	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Herbicide	Keeler, R.F. and Tu, A.T. eds. 1991. Toxicology of Plant and Fungal Compounds. (Handbook of Natural Toxins Vol. 6) Marcel Dekker, Inc. NY. 665 pp.
Insectifuge	Jacobson, M., Glossary of Plant-Derived Insect Deterrents, CRC Press, Inc., Boca Raton, FL, 213 p, 1990.
Irritant	Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. Compendium of Safety Data Sheets for Research and Industrial Chemicals. VCH Publishers, New York. 3560-4253.
Perfumery	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Pesticide	
Spasmogenic	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
Transdermal	

BORNEOL Plant -- 20.0 -0.65 Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, *Thymus x citriodorus* (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.

**Activities (35)**

(-)-Chronotropic 29 ug/ml	Hansel, R., Keller, K., Rimpler, H., and Schneider, G. eds. 1992. Hager's Handbuch der Pharmazeutischen Praxis, Drogen (A-D), 1209 pp., 1993 (E-O), 970 pp., 1994 (P-Z), 1196 pp. Springer-Verlag, Berlin.
(-)-Inotropic 29 ug/ml	Hansel, R., Keller, K., Rimpler, H., and Schneider, G. eds. 1992. Hager's Handbuch der Pharmazeutischen Praxis, Drogen (A-D), 1209 pp., 1993 (E-O), 970 pp., 1994 (P-Z), 1196 pp. Springer-Verlag, Berlin.
Allelochemic	
Analgesic	
Antiacetylcholine	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
Antibacterial MIC=125-250 ug/ml	
Antibronchitic	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
Antiescherichic MIC=125 ug/ml	
Antifeedant	
Antiinflammatory	
Antiotitic	
Antipyretic	
Antisalmonella MIC=125 ug/ml	
Antispasmodic ED50=0.008 mg/ml	
Antistaphylococcic MIC=250 ug/ml	
Antiyeast MIC=250 ug/ml	
CNS-Stimulant	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
CNS-Toxic	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
Candidicide MIC=250 ug/ml	
Choleretic	
FLavor FEMA<1	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Fungicide	
Hepatoprotective	
Herbicide IC50=470 mM	Lydon, J. & Duke, S., The potential of pesticides from plants, pp. 1-41 in Craker, L. & Simon, J., eds, Herbs, Spices & Medicinal Plants: Recent Advances in Botany, Horticulture, & Pharmacology, v. 4, Oryx Press, Phoenix, 1989, 267pp.
Herbicide IC50=470 uM	Keeler, R.F. and Tu, A.T. eds. 1991. Toxicology of Plant and Fungal Compounds. (Handbook of Natural Toxins Vol. 6) Marcel Dekker, Inc. NY. 665 pp.
Inhalant	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
Insect-Repellent	
Insectifuge	Jacobson, M., Glossary of Plant-Derived Insect Deterrents, CRC Press, Inc., Boca Raton, FL, 213 p, 1990.
Irritant	Rinzler, C. A. 1990. The Complete Book of Herbs, Spices and Condiments. Facts on File, New York. 199 pp.
Myorelaxant	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
Nematicide MLC=1 mg/ml	Shoyakugaku Zasshi, 44: 183.
Perfumery	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
Pesticide	
Sedative	Medline (post 1990 searches filed in my computer)
Tranquilizer	

BORNYL-ACETATE Plant -- -- -0.47 Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, *Thymus x citriodorus* (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.

#### Activities (12)

(-)-Chronotropic 933 n/ml	Hansel, R., Keller, K., Rimpler, H., and Schneider, G. eds. 1992. Hager's Handbuch der Pharmazeutischen Praxis, Drogen (A-D), 1209 pp., 1993 (E-O), 970 pp., 1994 (P-Z), 1196 pp. Springer-Verlag, Berlin.
(-)-Inotropic 933 n/ml	Hansel, R., Keller, K., Rimpler, H., and Schneider, G. eds. 1992. Hager's Handbuch der Pharmazeutischen Praxis, Drogen (A-D), 1209 pp., 1993 (E-O), 970 pp., 1994 (P-Z), 1196 pp. Springer-Verlag, Berlin.
Antibacterial	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Antifeedant	Jacobson, M., Glossary of Plant-Derived Insect Deterrents, CRC Press, Inc., Boca Raton, FL, 213 p, 1990.
Antispasmodic ED50=0.09 mg/ml	Fitoterapia No.59-1984.
Antiviral	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Expectorant	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
FLavor FEMA 70-80	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Insectifuge	Blaschek, W., Hansel, R., Keller, K., Reichling, J., Rimpler, H., and Schneider, G. eds. 1998. Hager's Handbuch der Pharmazeutischen Praxis, Auflage Band 2 (A-K), 909 pp., (L-Z), 858 pp. Springer-Verlag, Berlin.
Myorelaxant	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. Herbal Medicine - A Guide for Health-care Professionals. The Pharmaceutical Press, London. 296pp.
Pesticide	
Sedative	

CAMPHENE Plant -- 80.0 -0.47 Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, *Thymus x citriodorus* (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.

#### Activities (9)

Allelopathic	Wright, C. W. (Ed) 2002. Medicinal & Aromatic Plants - Industrial Profiles. Artemisia. 344pp. Maffei, M. (Ed) 2002. Vetiveria. The Genus Vetiveria. Taylor & Francis. NY, NY. 191pp. Southwell, I., Lowe, R. (Eds) 1999. Tea Tree. The Genus Melaleuca. Harwood Acad. Pub. Amsterdam, Netherlands.
Antilithic?	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
Antioxidant	Jim Duke's personal files.
Expectorant	Hansel, R., Keller, K., Rimpler, H., and Schneider, G. eds. 1992. Hager's Handbuch der Pharmazeutischen Praxis, Drogen (A-D), 1209 pp., 1993 (E-O), 970 pp., 1994 (P-Z), 1196 pp. Springer-Verlag, Berlin.
FLavor FEMA 15-175	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Hypocholesterolemic?	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
Insectifuge	Jacobson, M., Glossary of Plant-Derived Insect Deterrents, CRC Press, Inc., Boca Raton, FL, 213 p, 1990.
Pesticide	
Spasmogenic	Fitoterapia No.59-1984.

CAMPHOR Plant -- 20.0 -0.64 Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, *Thymus x citriodorus* (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.

**Activities (41)**

Allelopathic	
Analgesic	
Anesthetic	
Antiacne	Nigg, H.N. and Seigler, D.S., eds. 1992. <i>Phytochemical Resources for Medicine and Agriculture</i> . Plenum Press, New York. 445 pp.
Antidiarrheic 500 ug/ml	Wealth of India.
Antidysenteric 500 ug/ml	Wealth of India.
Antiemetic 100-200 mg man orl	Huang, K. C. 1993. <i>The Pharmacology of Chinese Herbs</i> . CRC Press, Boca Raton, FL 388 pp.
Antifeedant IC50=5,000 ppm diet	Lydon, J. & Duke, S., The potential of pesticides from plants, pp. 1-41 in Craker, L. & Simon, J., eds, <i>Herbs, Spices &amp; Medicinal Plants: Recent Advances in Botany, Horticulture, &amp; Pharmacology</i> , v. 4, Oryx Press, Phoenix, 1989, 267pp.
Antifibrositic	Martindale's 28th
Antineuralgic	Martindale's 28th
Antipruritic	Merck 11th Edition
Antiseptic	Merck 11th Edition
Antispasmodic ED50=0.075 mg/ml	Fitoterapia No.59-1984.
CNS-Stimulant	
Cancer-Preventive	Stitt, P. A. Why George Should Eat Broccoli. Dougherty Co, Milwaukee, WI, 1990, 399 pp.
Carminative	Yamamoto, A., Umemori, S., and Muranishi, S. 1993. Absorption Enhancement of Intrapulmonary Administered Insulin by Various Absorption Enhancers and Protease Inhibitors in Rats. <i>J. Pharm. Pharmacol.</i> 46: 14-18, 1994.
Convulsant	R.J. Hixtable (Huxtable, R.J. (as T. Max). 1992. This and That:The Essential Pharmacology of Herbs and Spices. <i>Tips</i> 13:15-20 Huxtable, R.J. 1992b. The Myth of Benificent Nature. The Risk of Herbal Preparations. <i>Anns. Intern. Med.</i> 117(2):165-6; Huxtable, R.
Cosmetic	Jeffery B. Harborne and H. Baxter, eds. 1983. <i>Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants</i> . Taylor & Frost, London. 791 pp.
Counterirritant	Martindale's 28th
Decongestant	Nigg, H.N. and Seigler, D.S., eds. 1992. <i>Phytochemical Resources for Medicine and Agriculture</i> . Plenum Press, New York. 445 pp.
Deliriant	Merck 11th Edition
Ecbolic	
Emetic	
Epileptogenic	Newall, C. A., Anderson, L. A. and Phillipson, J. D. 1996. <i>Herbal Medicine - A Guide for Health-care Professionals</i> . The Pharmaceutical Press, London. 296pp.
Expectorant	Martindale's 29th
Fungicide ED50=2.7 mM	Keeler, R.F. and Tu, A.T. eds. 1991. <i>Toxicology of Plant and Fungal Compounds. (Handbook of Natural Toxins Vol. 6)</i> Marcel Dekker, Inc. NY. 665 pp.
Herbicide IC50=3.3-180 mM	Lydon, J. & Duke, S., The potential of pesticides from plants, pp. 1-41 in Craker, L. & Simon, J., eds, <i>Herbs, Spices &amp; Medicinal Plants: Recent Advances in Botany, Horticulture, &amp; Pharmacology</i> , v. 4, Oryx Press, Phoenix, 1989, 267pp.
Insect-Repellent	
Insectifuge	
Irritant	Jeffery B. Harborne and H. Baxter, eds. 1983. <i>Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants</i> . Taylor & Frost, London. 791 pp.
Nematicide MLC=1 mg/ml	Shoyakugaku Zasshi, 44: 183.
Occuloirritant	
P450-2B1-Inhibitor IC50=7.89 uM	
Pesticide	
Respirainhibitor	Merck 11th Edition
Respirastimulant	Huang, K. C. 1993. <i>The Pharmacology of Chinese Herbs</i> . CRC Press, Boca Raton, FL 388 pp.
Rubefacient	
Stimulant	R.J. Hixtable (Huxtable, R.J. (as T. Max). 1992. This and That:The Essential Pharmacology of Herbs and Spices. <i>Tips</i> 13:15-20 Huxtable, R.J. 1992b. The Myth of Benificent Nature. The Risk of Herbal Preparations. <i>Anns. Intern. Med.</i> 117(2):165-6; Huxtable, R.
Transdermal	
Verrucolytic	Nigg, H.N. and Seigler, D.S., eds. 1992. <i>Phytochemical Resources for Medicine and Agriculture</i> . Plenum Press, New York. 445 pp.
Vibriocide 500 ug/ml	Wealth of India.

CIS-BETA-OCIMENE	Plant	--	20.0	-1.0	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. <i>Flav. &amp; Fragr. J.</i> 10: 225-229.
CITRONELLAL	Plant	--	10.0	-1.0	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. <i>Flav. &amp; Fragr. J.</i> 10: 225-229.

**Activities (20)**

Acaricide	
Allergenic	
Antibacterial	
Antiseptic 3.8 x phenol	Wagner & Wolff, eds. 1977. New Natural Products (RS164. I56. 176)
Antistaphylococcic	
Antistreptococcic	
Candidicide	
Embryotoxic	
FLavor FEMA <1	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Fungicide	
Insectifuge	Merck 11th Edition
Irritant	Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. Compendium of Safety Data Sheets for Research and Industrial Chemicals. VCH Publishers, New York. 3560-4253.
Motor-Depressant	Buchbauer et al, e.g.Buchbauer et al,1993.Therapeutic properties of essential oils and fragrances, Chap.12 in Teranishi,R, Buttery,R.G and Sugisawa,H. Eds. Bioactive Volatile Compounds from Plants. ACS Symposium Series 525. Amer. Chem. Soc., Washington DC
Mutagenic?	
Nematicide MIC 1 mg/ml	Shoyakugaku Zasshi, 44: 183.
P450-2B1-Inhibitor IC50=1.56 uM	
Perfumery	
Pesticide	
Sedative ED=1 mg/kg	Wagner & Wolff, eds. 1977. New Natural Products (RS164. I56. 176)
Teratogenic	

CITRONELLOL	Plant	--	30.0	-0.68	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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**Activities (15)**

Allergenic	
Antibacterial	
Antiseptic	
Antistaphylococcic	
Antistreptococcic	
Candidicide	
FLavor FEMA 1-50	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Fungicide	HerbalGram No. 17.
Herbicide IC50=160 uM	Keeler, R.F. and Tu, A.T. eds. 1991. Toxicology of Plant and Fungal Compounds. (Handbook of Natural Toxins Vol. 6) Marcel Dekker, Inc. NY. 665 pp.
Irritant	Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. Compendium of Safety Data Sheets for Research and Industrial Chemicals. VCH Publishers, New York. 3560-4253.
Nematicide MLC=100 ug/ml	Shoyakugaku Zasshi, 44: 183.
Perfumery	Merck 11th Edition
Pesticide	
Sedative	Wagner & Wolff, eds. 1977. New Natural Products (RS164. I56. 176)
Trichomonicide LD100=300 ug/ml	

EO	Plant	--	10000.0	0.02	*
GAMMA-TERPINENE	Plant	--	--	-0.53	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.



**Activities (11)**ACE-Inhibitor 100 ug/ml  
(weak activity)

Acaricide

Aldose-Reductase-  
Inhibitor 100 ug/ml

Okamura, K., Iwakami, S., Matsunaga, T. 1992. Biological Activity of Monoterpenes from Trees. Toyama-Ken Yakuji Kenkyusho Nenpo, (20): 95-101.

Antiacetylcholinesterase  
IC23=1.2 mM

Antifeedant

Blaschek, W., Hansel, R., Keller, K., Reichling, J., Rimpler, H., and Schneider, G. eds. 1998. Hager's Handbuch der Pharmazeutischen Praxis, Auflage Band 2 (A-K), 909 pp., (L-Z), 858 pp. Springer-Verlag, Berlin.

Antioxidant

Jim Duke's personal files.

FLavor FEMA 1-40

Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry

Insectifuge

Blaschek, W., Hansel, R., Keller, K., Reichling, J., Rimpler, H., and Schneider, G. eds. 1998. Hager's Handbuch der Pharmazeutischen Praxis, Auflage Band 2 (A-K), 909 pp., (L-Z), 858 pp. Springer-Verlag, Berlin.

Irritant

Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. Compendium of Safety Data Sheets for Research and Industrial Chemicals. VCH Publishers, New York. 3560-4253.

Perfumery

Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry

Pesticide

GERANIAL	Plant	--	820.0	-0.31	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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**Activities (13)**AntiEBV IC50=16  
uM

Antiaflatoxin

Antibacterial

Onawunmi, G.O., Yisak, W-A., Ogunlana,\* E.O. 1984. Antibacterial Constituents In The Essential Oil Of *Cymbopogon citratus* (DC.) Stapf. Journal of Ethnopharmacology, 12: 279-286, 1984.

Antitumor (Colon)

Antitumor (Skin)

Antiviral IC50=16  
uM

Antiyeast

Chemopreventive

Estrogenic

Fungicide

Glutathionigenic

Pesticide

Spasmolytic

GERANIOL	Plant	--	6130.0	0.6	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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**Activities (35)**

Allergenic	
Anthelmintic	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.
Antibacterial MIC=400 ug/ml	Muroi, H. and Kubo, I. 1993. Combination Effects of Antibacterial Compounds in Green Tea Flavor against Streptococcus mutans. J. Agric. Food Chem. 41: 1102-1105.
Antibacterial MIC=64 ug/ml	
Antibacterial MBC=800 ug/ml	
Anticancer (Pancreas) IC50=265 uM	
Anticariogenic MIC=400 ug/ml	Muroi, H. and Kubo, I. 1993. Combination Effects of Antibacterial Compounds in Green Tea Flavor against Streptococcus mutans. J. Agric. Food Chem. 41: 1102-1105.
Antimelanomic IC50=150 uM/l	
Antisalmonella MIC=400 ug/ml	
Antiseptic 7 x phenol	Wagner & Wolff, eds. 1977. New Natural Products (RS164. I56. 176)
Antiseptic MIC=64 ug/ml	
Antiseptic 400-800 ug/ml	
Antispasmodic	Buchbauer, G., Jirovetz*, L., Nikiforov, A., Remberg, G., Raverdino, V. 1989. Headspace-Analysis and Aroma Compounds of Austrian Hay-Blossoms (Flores Graminis, Graminis Flos) used in Aromatherapy. J. Ess. Oil Res., 2: 185-191, 1990.
Antitubercular MIC=64 ug/ml	
Antitumor	Yu, S.G., Anderson, P.J., and Elson, C.E. 1995. Efficacy of B-Ionone in the Chemoprevention of Rat Mammary Carcinogenesis. J. Agric. Food Chem. 43: 2144-2147.
Antitumor (Pancreas) IC50=265 uM	
Ascaricide	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.
CNS-Stimulant	List, P.H. and Horhammer, L., Hager's Handbuch der Pharmazeutischen Praxis, Vols. 2-6, Springer-Verlag, Berlin, 1969-1979.
Cancer-Preventive	Stitt, P. A. Why George Should Eat Broccoli. Dougherty Co, Milwaukee, WI, 1990, 399 pp.
Candidicide	
Embryotoxic	
Emetic 3 x ipecac	Lawrence Review of Natural Products, Sep-97.
Expectorant	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.
FLavor FEMA 1-10	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Fungicide IC93=2 mM	Lydon, J. & Duke, S., The potential of pesticides from plants, pp. 1-41 in Craker, L. & Simon, J., eds, Herbs, Spices & Medicinal Plants: Recent Advances in Botany, Horticulture, & Pharmacology, v. 4, Oryx Press, Phoenix, 1989, 267pp.
Herbicide IC100-2,000 uM	Keeler, R.F. and Tu, A.T. eds. 1991. Toxicology of Plant and Fungal Compounds. (Handbook of Natural Toxins Vol. 6) Marcel Dekker, Inc. NY. 665 pp.
Insectifuge 50 ppm	
Insectiphile	Merck 11th Edition
Mycobactericide MIC=64 ug/ml	
Nematicide IC86=100 ug/ml	Nigg, H.N. and Seigler, D.S., eds. 1992. Phytochemical Resources for Medicine and Agriculture. Plenum Press, New York. 445 pp.
Nematicide MLC=1,000 ug/ml	Shoyakugaku Zasshi, 44: 183.
Perfumery	Merck 11th Edition
Pesticide	
Sedative	
Trichomonicide LD100=300 ug/ml	

GERANYL-ACETATE Plant -- 100.0 -0.45 Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, Thymus x citriodorus (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.

**Activities (5)**

Allergenic	
FLavor FEMA 1-20	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Insectiphile	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
Perfumery	Jeffery B. Harborne and H. Baxter, eds. 1983. Phytochemical Dictionary. A Handbook of Bioactive Compounds from Plants. Taylor & Frost, London. 791 pp.
Sedative	Jim Duke's personal files.

GERANYL-BUTYRATE Plant -- 80.0 -0.62 Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, Thymus x citriodorus (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.

**Activities (3)**

Flavor FEMA 1-10	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry			
Perfumery	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry			
Sedative	Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. Compendium of Safety Data Sheets for Research and Industrial Chemicals. VCH Publishers, New York. 3560-4253.			

GERMACADIENOL- I	Plant	--	20.0		Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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GERMACRENE-D	Plant	--	110.0	-0.33	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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**Activities (2)**

Pesticide  
Pheromone

LIMONENE	Plant	--	--	-0.49	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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**Activities (60)**

AChE-Inhibitor	Grundy, D. L. and Still, C. C., Inhibition of acetylcholinesterases by pulegone-1,2-epoxide, <i>Oest. Biochem. &amp; Physiol.</i> , 23, 1985, 383-8.
Acaricide LC100=8 uM	
Allelochemic	
Allergenic 1/20th carene	
Antiacetylcholinesterase IC22-26=1.2 mM	
Antiadenomic	
Antialzheimeran?	Grundy, D. L. and Still, C. C., Inhibition of acetylcholinesterases by pulegone-1,2-epoxide, <i>Oest. Biochem. &amp; Physiol.</i> , 23, 1985, 383-8.
Antiasthmatic	
Antibacterial	Revista Itiliana Eppos, 12: 5, 1994.
Anticancer	
Antiesophagitic	
Antifeedant	
Antiflu	Economic & Medicinal Plant Research, 5: 195.
Antiinflammatory	
Antilithic	
Antilymphomic	
Antimetastatic (Stomach)	
Antimutagenic	Economic & Medicinal Plant Research, 6: 235.
Antiobesity	
Antiseptic	
Antispasmodic ED50=0.197 mg/ml	Fitoterapia No.59-1984.
Antitumor	
Antitumor (Breast)	
Antitumor (Colon)	
Antitumor (Pancreas)	
Antitumor (Prostate)	
Antitumor (Stomach)	
Antiviral	
Apoptotic	
Bronchoprotectant	
Cancer-Preventive	Stitt, P. A. Why George Should Eat Broccoli. Dougherty Co, Milwaukee, WI, 1990, 399 pp.
Candidistat	
Chemopreventive	
Cholesterolytic	
Detoxicant	
Enterocontractant	J. Aromatherapy 4: 22.
Expectorant	
FLavor	
Fungiphilic	J. Agric. Food Chem. 43: 2283.
Fungistat	
GST-Inducer	
Herbicide IC50=45 uM	Keeler, R.F. and Tu, A.T. eds. 1991. Toxicology of Plant and Fungal Compounds. (Handbook of Natural Toxins Vol. 6) Marcel Dekker, Inc. NY. 665 pp.
Histaminic	
Immunomodulator	
Insecticide 0.37 uM/fly	
Insectifuge	Jacobson, M., Glossary of Plant-Derived Insect Deterrents, CRC Press, Inc., Boca Raton, FL, 213 p, 1990.
Interleukin-6-Inhibitor	
Irritant	
Lipolytic	
Myorelaxant 50 mg/kg	
NO-Genic	
Nematicide IC=100 ug/ml	Nigg, H.N. and Seigler, D.S., eds. 1992. Phytochemical Resources for Medicine and Agriculture. Plenum Press, New York. 445 pp.
Ornithine-Decarboxylase-Inhibitor ~750 mg/kg (diet)	
Ozone-Scavenger	
P450-Inducer	
Peristaltic	
Pesticide	
Photosensitizer	Rinzler, C. A. 1990. The Complete Book of Herbs, Spices and Condiments. Facts on File, New York. 199 pp.
Sedative ED=1-32 mg/kg	Wagner & Wolff, eds. 1977. New Natural Products (RS164. I56. 176)
Transdermal	

LINALOL	Plant	--	80.0	-0.41	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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LINALYL-ACETATE	Plant	--	--	-0.58	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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#### Activities (7)

Anesthetic 0.01-1 ug/ml

Antioxidant 400 ppm

Antispasmodic ED50=0.21 mg/ml Fitoterapia No.59-1984.

Flavor FEMA 2-15 Aloe Research Council - Duke writeup of non-peer reviewed book by Coats and draft by Henry

Motor-Depressant Buchbauer et al, e.g. Buchbauer et al, 1993. Therapeutic properties of essential oils and fragrances. Chap.12 in Teranishi, R., Buttery, R.G and Sugisawa, H. Eds. Bioactive Volatile Compounds from Plants. ACS Symposium Series 525. Amer. Chem. Soc., Washington DC

Perfumery Merck 11th Edition

Sedative

NERAL	Plant	--	55.0	-0.72	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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#### Activities (4)

Antibacterial Iwu, M.M. 1993. Handbook of African Medicinal Plants. CRC Press, Boca Raton, FL 435 pp.

Antispasmodic

Pesticide

Termiticide LD100=5 mg/g

NEROL	Plant	--	280.0	-0.26	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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#### Activities (10)

Antibacterial HerbalGram No. 17.

Antihelicobacter

Antiseptic Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.

Antiulcer

Estrogenic

FLavor FEMA 1-20 Aloe Research Council - Duke writeup of non-peer reviewed book by Coats and draft by Henry

Perfumery Merck 11th Edition

Pesticide

Sedative Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. Compendium of Safety Data Sheets for Research and Industrial Chemicals. VCH Publishers, New York. 3560-4253.

Trichomonicide ED100=300 ug/ml

OCT-1-EN-3-OL	Plant	--	40.0		Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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OCTAN-3-OL	Plant	--	70.0	-1.0	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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P-CYMENE	Plant	--	10.0	-0.42	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, <i>Thymus x citriodorus</i> (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
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**Activities (16)**

Analgesic	Martindale's 28th
Antiacetylcholinesterase IC40=1.2 mM	
Antibacillary	
Antibacterial	
Antiflu	
Antirheumatalgic	Martindale's 28th
Antiviral	
FLavor FEMA 12-250	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry
Fungicide	Keeler, R.F. and Tu, A.T. eds. 1991. Toxicology of Plant and Fungal Compounds. (Handbook of Natural Toxins Vol. 6) Marcel Dekker, Inc. NY. 665 pp.
Herbicide IC50=50 uM	Keeler, R.F. and Tu, A.T. eds. 1991. Toxicology of Plant and Fungal Compounds. (Handbook of Natural Toxins Vol. 6) Marcel Dekker, Inc. NY. 665 pp.
Insectifuge	Blaschek, W., Hansel, R., Keller, K., Reichling, J., Rimpler, H., and Schneider, G. eds. 1998. Hager's Handbuch der Pharmazeutischen Praxis, Auflage Band 2 (A-K), 909 pp., (L-Z), 858 pp. Springer-Verlag, Berlin.
Irritant	Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. Compendium of Safety Data Sheets for Research and Industrial Chemicals. VCH Publishers, New York. 3560-4253.
Laxative	Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. Compendium of Safety Data Sheets for Research and Industrial Chemicals. VCH Publishers, New York. 3560-4253.
Pesticide	
Sedative	Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. Compendium of Safety Data Sheets for Research and Industrial Chemicals. VCH Publishers, New York. 3560-4253.
Trichomonidic LD100=50 ug/ml	

SABINENE Plant -- 10.0 -0.45 Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, *Thymus x citriodorus* (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.

**Activities (5)**

Antibacterial	
Antihelicobacter	
Antiseptic	
Antiulcer	
Perfumery	Aloe Research Council - Duke writeup of non-peer reviewd book by Coats and draft by Henry

THYMOL Plant -- 50.0 -0.57 Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, *Thymus x citriodorus* (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.

**Activities (71)**

Acaricide	
Allergenic	
Analgesic	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.
Ancylostomicide	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.
Anesthetic	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.
Ankylostomacide	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.
Anthelmintic	Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
Antiacne	Nigg, H.N. and Seigler, D.S., eds. 1992. Phytochemical Resources for Medicine and Agriculture. Plenum Press, New York. 445 pp.
Antiaggregant IC50=0.75	Tramil, 42: 511.
Antialzheimeran?	L. Gracza (1985) as cited by Buchbauer re antiacetylcholinesterase.
Antiarthritic	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.
Antiatherosclerotic IC50=4 uM	
Antibacterial MIC=50-400 ug/ml	
Antibronchitic	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.
Anticarcinogenic MIC=200-400 ug/ml	
Anticholinesterase	L. Gracza (1985) as cited by Buchbauer re antiacetylcholinesterase.
Antihalitosis	American Health, 12(4): 17, 1993.
Antiherpetic	Martindale's 28th
Antiinflammatory (=indomethacin)	
Antilepric	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.
Antimelanomic IC50=120 uM/l	
Antineuritic	
Antioxidant 100 ppm	Martindale's 28th

Antioxidant (LDL) IC50=4 uM	
Antiperiodontic MIC=50-200 ug/ml	
Antiplatelet MIC=39-625 ug/ml	Osawa, K., Matsumoto, T., Maruyama, T., Takiguchi, T., Okuda, K., and Takazoe, I., Studies of the antibacterial activity of plant extracts and their constituents against periodontopathic bacteria, Bull Tokyo Dent. Coll., 31 (1), 1990, 17-21
Antiradicular EC=60	Jimenez, J., Navarro, M.C., Montilla, M.P., Martin, A. and Martinez, A. 1993. Thymus zygis Oil: Its Effects on CCl4-Induced Hepatotoxicity and Free Radical Scavenger Activity. JE05: 153-8.
Antirheumatic	Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
Antisalmonella	
Antiseptic 20 x phenol	Wagner & Wolff, eds. 1977. New Natural Products (RS164. I56. 176)
Antispasmodic	
Antistaphylococcic	
Antistreptococcic MIC=200-400 ug/ml	
Antitrichinosic 5%	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.
Antitussive	Iwu, M.M. 1993. Handbook of African Medicinal Plants. CRC Press, Boca Raton, FL 435 pp.
Ataxigenic	Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. Compendium of Safety Data Sheets for Research and Industrial Chemicals. VCH Publishers, New York. 3560-4253.
Candidicide 100 ug/ml (>Nystatin)	
Carminative	Yamamoto, A., Umemori, S., and Muranishi, S. 1993. Absorption Enhancement of Intrapulmonary Administered Insulin by Various Absorption Enhancers and Protease Inhibitors in Rats. J. Pharm. Pharmacol. 46: 14-18, 1994.
Counterirritant	Nigg, H.N. and Seigler, D.S., eds. 1992. Phytochemical Resources for Medicine and Agriculture. Plenum Press, New York. 445 pp.
Culicide LC50=36-49 mg/l	
Cyclooxygenase-Inhibitor (=indomethacin)	
Dentifrice	Aloe Research Council - Duke writeup of non-peer reviewed book by Coats and draft by Henry
Deodorant	Martindale's 28th
Dermatitigenic	
Enterorelaxant	J. Aromatherapy 4: 22.
Enterotoxic	Wichtl, M. 1984. Teedrogen. Ein Handbuch fur Apotheker und Arzte. Wissenschaftliche Verlagsgesellschaft. mbH Stuttgart. 393 pp.
Expectorant	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
FLavor FEMA 2-100	Aloe Research Council - Duke writeup of non-peer reviewed book by Coats and draft by Henry
Fungicide	Merck 11th Edition
Gastroirritant	Martindale's 29th
Gram(+)icide MIC=200-400 ug/ml	
Gram(-)icide MIC=50-200 ug/ml	
Insecticide LC50=36-49 mg/l	
Insecticide 0.22 uM/fly	
Insectifuge	
Irritant	Leung, A. Y. and Foster, S. 1995. Encyclopedia of Common Natural Ingredients 2nd Ed. John Wiley & Sons, New York. 649 pp.
Larvicide 10 ppm	Berenbaum, M. R., The natives knew, Chemtech, (May), 1990, 275-279.
Larvicide 58 ppm	
Larvicide LC50=36-49 mg/l	
Molluscicide	
Myorelaxant	J. Aromatherapy 4: 22.
Nematicide MLC=0.1 mg/ml	Shoyakugaku Zasshi, 44: 183.
Perfumery	Aloe Research Council - Duke writeup of non-peer reviewed book by Coats and draft by Henry
Pesticide	
Sedative	Zebovitz, T. C. Ed. 1989. Part VII. Flavor and Fragrance Substances, in Keith L. H. and Walters, D.B., eds. Compendium of Safety Data Sheets for Research and Industrial Chemicals. VCH Publishers, New York. 3560-4253.
Sprout-Inhibitor	Duke, J.A.. Personal Communication.
Tracheorelaxant	
Trichomonicide LD100=25 ug/ml	
Urinary-Antiseptic	Williamson, E. M. and Evans, F. J., Potter's New Cyclopaedia of Botanical Drugs and Preparations, Revised Ed., Saffron Walden, the C. W. Daniel Co., Ltd., Essex UK, 362 pp, 1988, reprint 1989.
Varroacide	
Vermicide	Madaus, G. 1976. Lehrbuch der Biologischen Hilfsmittel. Vol., 1-3. 2862 pp. (+ 144 p. index). Georg Olms Verlag, Hildesheim. Reprint of 1938 Madaus.

THYMOL-METHYL-ETHER	Plant	--	--	-0.49	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, Thymus x citriodorus (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.
TRANS-SABINENE-HYDRATE	Plant	--	10.0	-0.38	Stahl-Biskup, E. and Holthuijzen, J. 1995. Essential oil and glycosidally bound volatiles of lemon-scented thyme, Thymus x citriodorus (Pers.) Schreb. Flav. & Fragr. J. 10: 225-229.