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Committee on Herbal Medicinal Products (HMPC)

List of references supporting the assessment of *Leonurus cardiaca L.*, herba

Leonuri cardiacae herba,
(motherwort)

Draft

The Agency acknowledges that copies of the underlying works used to produce this monograph were provided for research only with exclusion of any commercial purpose.

Abascal K, Yarnell E (2004) Nervine herbs for treating anxiety. Alternative & Complementary Therapies (England); 10: 309-315

Abebe W (2002) Herbal medication: Potential for adverse interactions with analgesic drugs. Journal of Clinical Pharmacy and Therapeutics; 27: 391-401

Agnihotri VK, ElSohly HN, Smillie TJ, Khan IA, Walker LA (2008) New Labdane Diterpenes from *Leonurus cardiaca*. Planta Med 74: 1288-1290

Ahmed F; Islam MA; Rahman MM (2006) Antibacterial activity of *Leonurus sibiricus* aerial parts. Fitoterapia; 77: 316-317

Ahmed F, Islam MA, Choudhuri MSK (2005) Central nervous system depressant activity of *Leonurus sibiricus*. Nigerian Journal of Natural Products and Medicine; 9: 35-37

Aizetmüller K, Tsevegüren N (1998) Phlomic acid in Lamioideae seed oils. Lamiales Newsletter 6: 13-16

Ali MS, Ibrahim SA, Jalil S, Choudhary MI (2007) Ursolic acid: A potent inhibitor of superoxides produced in the cellular system. Phytother. Res. 21:558-561

Almeida LFR; Delachiave MEA; Marques MOM (2005) Composição do óleo essencial de rubim (*Leonurus sibiricus* L. - Lamiaceae). [Composition of the essential oil of rubim (*Leonurus sibiricus* L. - Lamiaceae)]. Revista Brasileira de Plantas Medicinais 8: 35-38

American Botanical Council (2008) Herbs for potential adjunct treatment of thyroid disease. A review of botanical preparations for hypo- and hyperthyroidism, thyroid nodules, and thyroid cancer. HerbalGram 79: 52-65



An HJ; Rim HK; Lee JH; Suh SE; Lee JH; Kim NH; Choi IY; Jeong HJ; Kim IK; Lee JY; An NH; Kim HR; Um JY; Kim HM; Hong SH (2008) Leonurus sibiricus induces nitric oxide and tumor necrosis factor-alpha in mouse peritoneal macrophages. Canadian journal of physiology and pharmacology; 86: 682-690

Baek SH, Kim DC (2006) The effect of Leonurus sibiricus on the proliferation inhibition of human uterine leiomyoma cell and expression of gene related cell apoptosis. Korean medical database, 19: 1-12 (taken from Bajracharya 2009)

Bajracharya P; Lee EJ; Lee DM; Shim SH; Kim KJ; Lee SH; Bae JJ; Chun SS; Lee TK; Kwon SH; Choi I (2009) Effect of different ingredients in traditional Korean medicine for human uterine leiomyoma on normal myometrial and leiomyomal smooth muscle cell proliferation. Arch. Pharm. Res. 32: 1555-1563

Balch PA, Rister R (2002) Prescription for herbal healing: An easy to use A-Z reference to hundreds of common disorders and their herbal remedies. Avery Publishing Group, New York, 98-99

Barnes J, Anderson LA, Phillipson JD (2007) Herbal Medicines, 3rd ed. Pharmaceutical Press, London 447-448

Bensky D, Clavey S, Stöger E (2004) Chinese Herbal medicine – Materia medica 3rd ed. Eastland Press Seattle, 614-617

Bernatoniene J, Bernatoniene R, Jakstas V, Malinauskas F, Brusokas V (2003) Kraujotaka gerinancios tinkuros technologija bei analize. [Production technology and analysis of blood circulation improving tincture]. Medicina (Kaunas, Lithuania); 39 Suppl 2: 76-9

Bernatoniene R; Bernatoniene J; Ramanauskienė K (2004) Kraujotaka gerinancios tinkuros analize. [The analysis of tincture for improvement of blood circulation]. Medicina (Kaunas, Lithuania); 40: 758-761

Bernatoniene J, Kucinskaite A, Masteikova R, Kalveniene Z, Kasparaviciene G, Savickas A (2009) The comparison of anti-oxidative kinetics in vitro of the fluid extract from maidenhair tree, motherwort and hawthorn. Acta poloniae pharmaceutica; 66: 415-21

Benedum J, Loew D, Schilcher H (2006) Medicinal plants in Traditional Medicine, 4th. edition, Kooperation Phytopharmaka, Bonn, ISBN 3-929964-18-x, 126

BfArM (2010) draft monograph "Chinesisches Mutterkraut" in: Bekanntmachung einer Mitteilung zum Deutschen Arzneibuch (Empfehlungen der Fachausschüsse der Deutschen Arzneibuch-Kommission) vom 16. Dezember 2009, Bundesanzeiger Nr. 34, 03.03.2010: 909

Bird GW; Wingham J (1979) Anti-Cad lectin from the seeds of Leonurus cardiaca. Clinical and laboratory haematology; 1: 57-9

Blancafort P, Serradell MN (1977) Leonurine, Drugs of the Future; 2: 597-599

Bloniarz J, Zareba S, Wojcik P (2008) Ocena zawartosci Niklu i Chromu w ziolach i ich naparach stosowanych w terapii chorob ukladu krazenia. [Assessment of Nickel and Chromium content in herbs and their infusions applied in the treatment of the circulatory system diseases.] Bromatologia i Chemia Toksykologiczna; 41: 349-353

Bomme U (2003) Ein dokumentierter Feldanbau mit ausgewählten chinesischen Heilpflanzen kann in Bayern realisiert werden! [A documented field cultivation with selected Chinese medicinal plants can be realized in Bavaria!] Zeitschrift für Arznei- & Gewürzpflanzen; 8: 187-188

Bomme U, Heubl G, Bauer R (2006) Erste Ergebnisse der Untersuchungen zur botanischen Charakterisierung sowie zum Ertragsverhalten und Inhaltsstoffspektrum verschiedener Herkünfte von

Prunella vulgaris L., *Leonurus japonicus* Houtt. und *Sigesbeckia pubescens* Makino. [First results on the botanical characterization, crop yield and quality of different accessions from *Prunella vulgaris* L., *Leonurus japonicus* Houtt. and *Sigesbeckia pubescens* Makino.] Zeitschrift für Arznei- & Gewürzpflanzen; 11: 81-91

Bradley PR (1992) British Herbal Compendium Volume 1, British Herbal Medicine Association, Bournemouth, 161-162

Brand K; Zampirolo J; Schlemper V; Cechinel Filho V; Knoess W (1999) Antinociceptive effect of furanic labdane diterpenes. Arch. Pharm; 332 (Suppl. 2): 6

Brieskorn CH, Briner M, Schlumprecht L, Eberhardt KH (1952) Vergleichende quantitative Bestimmungen der Ursolsaure und des atherischen Oeles in pharmazeutisch und lebensmittelchemisch wichtigen Labiaten. Arch. Pharm. Ber. Deutsch. Pharm. Ges. 285: 290-296

Brieskorn CH, Broschek W (1972): Zur Kenntnis der Bitterstoffe und furanoider Verbindungen aus *Leonurus cardiaca* L., Pharma. Acta Helv. 47: 123-132

Brieskorn CH, Hofmann R (1979): Labiatenbitterstoffe: Ein Clerodanderivat aus *Leonurus cardiaca*. Tetrahedron Lett 27: 2511-2512

British Herbal Pharmacopoeia 1974, Sections One, Two & Three, British Herbal Medicine Association, London (taken from compilation in BHP 1983)

British Herbal Pharmacopoeia 1990, Volume 1, British Herbal Medicine Association

British Herbal Pharmacopoeia 4th ed. 1996, British Herbal Medicine Association, 137-138

Caelo (1979) Preisliste 1979, Caesar & Loretz, Hilden

Caelo (1994) Caelo Sortiments- und Preisliste 94/95, Caesar & Loretz, Hilden

Caelo (1997) Caelo Sortiments- und Preisliste 97-99, Caesar & Loretz, Hilden

Caelo (2003) Caelo Sortiments- und Preisliste 2003, Caesar & Loretz, Hilden

Caelo (2009) Pharmazeutische Grundsubstanzen 2009, Art. Nr. 527, www.caelo.de, Caesar & Loretz, Hilden

Cai XH; Che CT; Lam CK; Mak TC; Wu LJ (2006) A new labdane diterpene from *Leonurus heterophyllus*. Journal of Asian natural products research; 8: 599-603

Chan WC, Wong YC, Kong YC, Chun YT, Chang HT, Chan WF (1983) Clinical observation on the uterotonic effect of I-mu Ts'ao (*Leonurus artemisia*). The American journal of Chinese medicine; 11: 77-83

Chao Z; Ma LL; Zhou XJ (2004) Determination of stachydrine and leonurine in Herba Leonuri by ion-pair reversed-phase high-performance liquid chromatography. Di 1 jun yi da xue xue bao = Academic journal of the first medical college of PLA; 24: 1223-1226 (from abstract)

Chen ZS, Chen CX, Kwan CY (2000) Leonurine, an alkaloid from *Leonurus artemisia*, induces contraction in mouse uterine smooth muscle but relaxation in vascular smooth muscle of rat portal vein. Biomedical Research (Aligarh); 11: 209-212

Chen CX, Kwan CY (2001) Endothelium-independent vasorelaxation by leonurine, a plant alkaloid purified from Chinese motherwort. Life Sciences; 68: 953-960

Chen LC, Wang BR, Chen IC, Shao CH (2010) Use of Chinese herbal medicine among menopausal women in Taiwan. International journal of gynaecology and obstetrics 109: 63-66

Cheng V, Han P (1982) The effects of herbs on the levels of estrone and estrous cycle of rats and swines. Report to the National Science Council (taken from Hsieh 1985)

Chinwala MG, Gao M, Dai J; Shao J (2003) In vitro anticancer activities of *Leonurus heterophyllus* sweet (Chinese motherwort herb). Journal of alternative and complementary medicine (New York, N.Y.); 9: 511-8

Coelho de Souza G, Haas APS, von Poser GL, Schapoval EES, Elisabetsky E (2004) Ethnopharmacological studies of antimicrobial remedies in the south of Brazil. Journal of Ethnopharmacology; 90: 135-143

Coelho de Souza GP, Elisabetsky EI (1998) Ethnobotany and anticonvulsant properties of Lamiaceae from rio Grande do Sul (Brasil). Laminales Newsletter 6: 10-13

Cong Y, Wang JH, Li X (2005) A new flavonoside from *Leonurus heterophyllus*. Journal of Asian natural products research; 7: 273-277

Pharmacopoeia Commission of the Ministry of Public Health P.R. China (1996): A Coloured Atlas of the Chinese Materia Medica specified in Pharmacopoeia of the Peoples Republic of China, 1995 Edition, Joint Publishing, Hong Kong, 318

Deng Y (1993) Observation of the Thrombocytopenic Purpura Treated With Chinese Huo Xue Hua Yu Drugs Thromb Haemostasis; 69: 915

Dhein S (2005) Spezialextrakt zur Verwendung als Antiarrhytmikum bei herzrhythmusstörungen und zur Verbesserung der koronarperfusion sowie dessen Herstellung. DE patent appl. Nr. DE 102005060880A1 of 28.06.2007, date of submission 20.12.2005

Dhein S, Ritter M, Melichar K, Rauwald IW, Cerbai E, Mugelli A, Mohr FW (2007) Electrophysiologic and functional effects of *Leonurus cardiaca*, a medieval plant remedy. Naunyn-Schmiedeberg's Archives of Pharmacology; 375 (Suppl. 1): 25

EB6: Ergänzungsbuch zum Deutschen Arzneibuch, Sechste Ausgabe, Nachdruck 1953, 257-258

Erspamer V (1948) Ricerche farmacologiche sul *Leonurus cardiaca* L. e sul *Leonurus marrubiastrum* L. Archives internationales de pharmacodynamie et de thérapie; 76: 132-152

Finzelberg (2000) Spezifikation 0160301, Extr. Leonuri e herb. sicc (80% nativ), 04.09.2000, Finzelberg GmbH & Co KG, Andernach, Germany, submitted by AESGP

Fokina GI; Frolova TV; Roikhel VM; Pogodina VV (1991) Experimental phytotherapy of tick-borne encephalitis. Voprosy Virusologii; 36: 18-21

Giang PM; Son PT; Matsunami K; Otsuka H (2005a) New bis-spirolabdane-type diterpenoids from *Leonurus heterophyllus* Sw. Chemical & pharmaceutical bulletin; 53: 1475-1479

Giang PM; Son PT; Matsunami K; Otsuka H (2005b) New labdane-type diterpenoids from *Leonurus heterophyllus* SW. Chemical & pharmaceutical bulletin; 53: 938-941

Harkness R, Bratman S (2003) Handbook of Drug-Herb and Drug Supplement Interactions, London, 76-77

Harley R; Paton A (2001) *Leonurus japonicus* Houtt. (Labiatae): the correct name for a common tropical weed. Kew Bulletin; 56: 243-244

Hatfield JG (1886) The Botanical Pharmacopoeia, White & Pike, Moor Street Printing Works, Birmingham; *Leonurus*: Motherwort.

Heinrich M; Kuhnt M; Wright CW; Rimpler H; Phillipson JD; Schandlmaier A (1991) Lowland Mixe Indian Medicinal Plants: Parasitological and Microbiological Evaluation and Initial Phytochemical Study of Chaptalia nutans. *Planta Med*; 57 Suppl.: A5-A6

Heuberger H; Bomme U; Gross J; Kabelitz L; Reif K; Schmücker R (2008a) Inhaltsstoffgehalte ausgewählter Heilpflanzen für die traditionelle chinesische Medizin aus deutschem Versuchsanbau im Vergleich zu Importware aus Asien. [Constituents and extractives contents of selected herbal raw materials for traditional Chinese medicine from German experimental cultivation compared to imported materials from Asia.] *Zeitschrift für Arznei- & Gewürzpflanzen*; 13: 173-181

Heuberger H; Bomme U; Friedmann B; Groß J; Kabelitz L; Reif K; Schmücker R; Torres-Londoño P (2008b) Qualität von TCM-Drogen aus deutschem Anbau [Quality of traditional Chinese drugs cultivated in Germany.] *Deutsche Apotheker Zeitung*; 148: 48-53

Hon PM; Lee CM; Shang HS; Cui YX; Wong HNC; Chang HM (1991) Prehispanolone, a labdane diterpene from *Leonurus heterophyllus*. *Phytochemistry*; 30: 354-356

Hon PM; Si Wang E; Lam SKM; Choy YM; Lee CM; Wong HNC (1993) Preleoheterin and leoheterin, two labdane diterpenes from *Leonurus heterophyllus*. *Phytochemistry*; 33: 639-641

Hoppe HA (1949) *Drogenkunde*, 6. Aufl., Cram, De Gruyter, Hamburg 1949, 146-147

Hoppe HA (1958) *Drogenkunde*, 7. Aufl., Cram, De Gruyter & Co., Hamburg, 517

Hoppe HA (1975) *Drogenkunde* 8. Aufl., Bd. 1, De Gruyter, Berlin, New York, 643

Horita K; Noguchi Y; Matsunaga M; Uchida M; Shimizu K; Kohno T; Tsunoo A; Nishibe S (2002) Anti-arrhythmia constituent in Herba Leonuri. *Natural Medicines* 56: 212-214

Horstmann U; Pachaly P; Sin KS (1994) Leonurenosid I and II, two new glycosides from *Leonurus japonicus* Houtt CF: Second European Congress of Pharmaceutical Sciences; September 29-October 1, 1994; Berlin, Germany *European Journal of Pharmaceutical Sciences*; 2: 120

Hsieh LS; Suen HF; Lee S (1985) The effect of i-mu-ts'ao on a partially purified prostaglandin E 9-ketoreductase from swine kidney. *Proceedings of the National Science Council, Republic of China. Part B, Life sciences*; 9: 197-201

Islam MA; Firoj Ahmed; Das AK; Bachar SC (2005) Analgesic and anti-inflammatory activity of *Leonurus sibiricus*. *Fitoterapia*; 76: 359-362

Jeong HG; You HJ; Chang YS; Park SJ; Moon YH; Woo ER (2002) Inhibitory effects of medicinal herbs on Cytochrome P450 drug metabolizing enzymes. *Korean Journal of Pharmacognosy*; 33: 35-41 (from abstract)

Jia W; Wang X; Xu D; Zhao A; Zhang Y (2006) Common traditional Chinese medicinal herbs for dysmenorrhea. *Phytotherapy Research* 20: 819-824

Kang YH (2005) Inhibitory effects of herbal medicines on the platelet-activating factor (PAF) receptor binding. *Natural Product Sciences*; 11: 131-135

Kartnig T; Gruber A; Menzinger S (1985) Flavonoid-O-glycosides from the herbs of *Leonurus cardiaca*. *Journal of Natural Products*; 48: 494

Kartnig T, Hoffmann-Bohm K, Seitz R (2006): *Leonurus* in Hänsel R et. al. (Ed.) *HagerROM* 2006, Springer, Heidelberg

Khare CP (2007) *Indian Medicinal Plants*, Springer, Berlin, 368-369

Kim IG; Kang SC; Kim KC; Choung ES; Zee OP (2008) Screening of estrogenic and antiestrogenic activities from medicinal plants Environmental Toxicology and Pharmacology; 25: 75-82

Kinoshita K; Tanaka J; Kuroda K; Koyama K; Natori S; Kinoshita T; Yamada K (1991) Cycloleonurinin, a cyclic peptide from Leonuri Fructus. Chemical and Pharmaceutical Bulletin; 39: 712-715

Kishi Y, Sugiura S, Inoue S, Hayashi Y (1968) Synthesis of Leonurine. Chemical and Pharmaceutical Bulletin; 39: 712-715

Knöss W (1996) Bildung der Furanolabdanditerpene in Leonurus cardiaca L. und Marrubium vulgare L., Habilitationsschrift Mathematisch-Naturwissenschaftliche Fakultät der Rheinischen Friedrich-Wilhelms-Universität, Bonn

Knöss W, Zapp J (1998) Accumulation of Furanic labdane Diterpenes in Marrubium vulgare and Leonurus cardiaca. Planta med. 64, 357-361

Körfers A, Sun Yutian (2009): Traditionelle Chinesische Medizin, Wissenschaftliche Verlagsgesellschaft, Stuttgart, 476-478

Kommission E (1986) Aufbereitungsmonographie Leonuri herba der Kommission E, Budeanzeiger Nr. 50 vom 13.03.1986

Kong YC; Ng KH (1974) Stimulatory effect of Leonurus artemisia (i-mu ts'ao) on the contraction of human myometrium in vitro. Experientia; 30: 1281-1282

Kong YC; Yeung HW; Cheung YM; Hwang JC; Chan YW; Law YP; Ng KH; Yeung CH (1976) Isolation of the uterotonic principle from Leonurus artemisia, the Chinese motherwort. The American journal of Chinese medicine; 4: 373-382

Korean Food and Drug Administration: The Korean Herbal Pharmacopoeia (English Edition) 2002

Kozlova LM (1964) Some results of chromatographic investigation of Leonurus quinquelobatus Gilib. Grass. Khromatograficheskoe izuchenie travy pustynnika, 23: 33-38

Kraft K (2009) Herz-Kreislauf-Beschwerden Zeitschrift für Phytotherapie 30: 24-26

Krylow JF (ed.) (1993) [Registry of Medicinal Products of Russia (RMP)] (Russian), Inpharmchem, Moscow, 722-723

Kuchta K; Melichar K; Ritter M; Dhein S; Rauwald HW (2008) The antiarrhythmic effects of Leonurus cardiaca on cardiac electrophysiology, 7th Joint Meeting of GA, AFERP, ASP, PSE & SIF abstracts. Planta Med; 74: PA 326

Kuchta K, Volk RB, Rauwald HW (2009) Quantitative HPTLC determination of stachydine in cardioactive plant drugs such as in an antiarrhythmic refined extract of leonurus cardiaca Ph.Eur. Ztschr. Phytotherapie, 30 (Suppl.1), S 26 – S 27

Lee CM; Jiang LM; Shang HS; Hon PM; He Y; Wong HN (1991) Prehispanolone, a novel platelet activating factor receptor antagonist from Leonurus heterophyllus. British journal of pharmacology; 103: 1719-1724

Leger R; Lines E; Cunningham K; Garratty G (1996) A new form of polyagglutination related to Cad. Immunohematology / American Red Cross; 12: 69-71

Lin HC; Pan SM; Ding HY; Chou TC; Chang WL (2007) Antiplatelet effect of leonurine from Leonurus sibiricus. Taiwan Pharmaceutical Journal; 59: 149-152

Lin JH; Lin QD; Liu XH; Yan JY; He J; Li L; Gu H; Sun LZ; Zhang JP; Yu S; Ma YY; Niu JM; Xia Y; Zhao SC; Li W; Wang HL; Wang BS (2009) Multi-center study of motherwort injection to prevent

postpartum hemorrhage after caesarian section. *Zhonghua fu chan ke za zhi*; 44: 175-178 (from abstract)

Liu KH; Kim MJ; Jeon BH; Shon JH; Cha IJ; Cho KH; Lee SS; Shin JG (2006) Inhibition of human cytochrome P450 isoforms and NADPH-CYP reductase in vitro by 15 herbal medicines, including Epimedii herba. *Journal of Clinical Pharmacy and Therapeutics*; 31: 83-91

Loh KP; Huang SH; Tan BK; Zhu YZ (2009) Cerebral protection of purified Herba Leonuri extract on middle cerebral artery occluded rats. *J Ethnopharmacology* 125: 337-343

Lonicerus A (1679) Kreuterbuch, Frankfurt, II, 230, taken from Benedum (2006)

Malakov PY; Papanov GY; Jakupovic J; Grenz M; Bohlmann F (1985) The structure of leocardin, two epimers of a diterpenoid from *Leonurus cardiaca*. *Phytochemistry* 24: 2341-2343

Malakov PY, Papanov GY, tomova KN, Rodriguez B, De la torre MC (1998) An abietane diterpenoid from *leonurus marrubiastrum*. *Phytochemistry* 48: 557-559

Mashkovskij MD (1972) [Medicinal Products. manual for physicians. part I] (Russian) Publishing House Medicina, Moscow, 38-39

Masteiková R; Muselík J; Bernatoniene J; Majiene D; Savickas A; Malinauskas F; Bernatoniene R; Peciura R; Chalupová Z; Dvorácková K (2008) Antioxidantní aktivita tinktur připravených z hlohových plodu a nati srdceňku. [Antioxidant activity of tinctures prepared from hawthorn fruits and motherwort herb]. Ceská a Slovenská farmacie : casopis České farmaceutické společnosti a Slovenské farmaceutické společnosti; 57: 35-38

Matkowski A; Piotrowska M (2006) Antioxidant and free radical scavenging activities of some medicinal plants from the Lamiaceae. *Fitoterapia* 77: 346-353

Mattiolius PA (1626) Kreutterbuch, IV, 91 taken from Benedum (2006)

McGuffin M, Hobbs C, Upton R, Goldberg A (1997) Botanical Safety Handbook, CRC Press New York, 68-69; 169-171

Milkowska-Leyck K; Filipek B; Strzelecka H (2002) Pharmacological effects of lavandulifolioside from *Leonurus cardiaca*. *J Ethnopharmacology*; 80: 85-90

Miller LG (1998) Herbal medicinals. Selected Clinical Considerations Focussing on Known or potential Drug-Herb Interactions. *Arch intern Med.* 158: 2200-2211

Mockute D; Bernotiene G; Judzentiene A (2005) Storage-induced changes in essential oil composition of *leonurus cardiaca* L plants growing in vilnius and of commercial herbs. *Chemija* 16:29-32

Mockute D; Bernotiene G; Judzentiene A (2006) Germacrene D chemotype of essential oils of *Leonurus cardiaca* L. growing wild in Vilnius district (Lithuania) *Journal of Essential Oil Research* 18: 566-568

Morita H; Gonda A; Takeya K; Itokawa H (1996) Cycloleonuripeptides A, B and C, three new proline-rich cyclic nonapeptides from *Leonurus heterophyllus*. *Bioorganic & Medicinal Chemistry Letters*; 6: 767-770

Morita H; Gonda A; Takeya K; Itokawa H; Hirano T; Oka K; Shirota O (1997a) Solution state conformation of an immunosuppressive cyclic dodecapeptide, cycloleonurinin. *Tetrahedron*; 53: 7469-7478

Morita H; Gonda A; Takeya K; Itokawa H; Iitaka Y (1997b) Cycloleonuripeptide D, a new proline-rich cyclic decapeptide from *Leonurus heterophyllus*. *Tetrahedron*; 53: 1617-1626

Morita H; Gonda A; Takeya K; Itokawa H; Shirota O (1997c) Conformational preference of cycloleonuripeptides A, B, and C, three proline-rich cyclic nonapeptides from *Leonurus heterophyllus*. Chemical and Pharmaceutical Bulletin; 45: 161-164

Morita H; Iizuka T; Gonda A; Itokawa H; Takeya K (2006) Cycloleonuripeptides E and F, cyclic nonapeptides from *Leonurus heterophyllus*. Journal of natural products; 69: 839-841 (from abstract)

Morteza-Semnani K; Saeedi M; Akbarzadeh M (2008) The essential oil composition of *Leonurus cardiaca* L. Journal of Essential Oil Research; 20: 107-109

Nagasawa H; Inatomi H; Suzuki M; Yamamuro Y; Sensui N (1990a) Inhibition by motherwort (*Leonurus sibiricus* L.) of precancerous mammary hyperplastic alveolar nodules in mice. Shoyakugaku Zasshi 44: 176-178

Nagasawa H; Onoyama T; Suzuki M; Hibino A; Segawa T; Inatomi H (1990b) Effects of motherwort (*Leonurus sibiricus* L.) on preneoplastic and neoplastic mammary gland growth in multiparous GR/A mice. Anticancer research; 10: 1019-1023

Nagasawa H; Suzuki M; Inatomi H; Hibino A; Yamamuro Y; Sensui N (1991) Restoration by motherwort (*Leonurus sibiricus* L.) of lactation suppressed by pregnancy-dependent mammary tumors in GR/A mice. Asian-Australasian Journal of Animal Sciences; 4: 15-19

Nam SH; Kang MY (2004) Antioxidant activity of 13 medicinal plants. Pharmaceutical Biology; 42: 409-415

Pang SL; Tsuchiya S; Horie S; Uchida M; Murayama T; Watanabe K (2001) Enhancement of phenylephrine-induced contraction in the isolated rat aorta with endothelium by H₂O-extract from an oriental medicinal plant Leonuri herba. Japanese Journal of Pharmacology; 86: 215-222

Orlandi E (1950) Sull'applicazione del leonoru cardiaca nella terapia infantile. [Application of *Leonurus cardiaca* in therapy of children.], Il Lattante; 21: 582-586

Ovanesov KB (2005) The effect of tofisopam and tinctura leonuri on the color-discrimination function in young humans. Eksperimental'naia i klinicheskaiia farmakologiiia; 68: 56-59 (from abstract)

Ovanesov KB; Ovanesova IM; Arushanian EB (2006) Effects of melatonin and motherwort tincture on the emotional state and visual functions in anxious subjects. Eksperimental'naia i klinicheskaiia farmakologiiia; 69: 17-19 (from abstract)

Papanov G; Malakov P; Tomova K (1997a) 19-Hydroxygaleopsin, a labdane diterpenoid from *Leonurus cardiaca*. Phytochemistry 47: 139-141

Papanov GY; Malakov PY; Rodriguez B; De La Torre MC (1997b) A prefuranic labdane diterpene from *Leonurus cardiaca*. Phytochemistry 47: 1149-1151

Penso G. (1983) Index Plantarum Medicinalium Totius Mundi Eorumque Synonymorum, 2nd ed., OEMF, Milan, 605

Pin CH; Abdullah A; Murugaiyah M (2009) Toxicological Evaluation of Dried Kacangma Herb (*Leonurus sibiricus*) in Rats. Sains Malaysiana; 38: 499-509

Piozzi F; Bruno M; Rosselli S; Maggio A (2007) Structure and biological activity of the furan-diterpenoids from the genera *Leonotis* and *Leonurus*. Heterocycles 74: 31-52

Polyakov NG (1962) Investigation into biological activity of valerian and motherwart (*Leonorus*) (sic) tinctures on rabbits. Farmakologiiia i toksikologiiia; 25: 423-427

Qu GZ; Si CL; Wang MH (2006) Antioxidant constituents from *Leonurus japonicus*. Natural Product Sciences; 12: 197-200

Rácz G; Rácz-Kotilla E (1989) Sedative and Antihypertensive Activity of *Leonurus quinquelobatus*. Planta Med. 55: 97

Rauwald HW, Brehm O (1991) Screening of some medicinal plants for their possible calcium-antagonistic activity. Planta Med. 57 (Suppl. issue 2): A59

Rauwald HW; Brehm O; Odenthal KP (1994) Screening of nine vasoactive medicinal plants for their possible calcium antagonistic activity. Strategy of selection and isolation for the active principles of *Olea europaea* and *Peucedanum ostruthium*. Phytotherapy Research; 8: 135-140

Remblier C; Perault MC; Grisemann E; Cante JP; Bru P; Vandel B (1999) Biocarde and arrhythmias: possible digitaline like effect of this drug? Therapie; 54: 298

Reuter G; Diehl HJ (1970) Arzneipflanzen der Gattung *Leonurus* und ihre Wirkstoffe. [Medicinal plants of species *Leonurus* and their active substances.] Die Pharmazie; 25: 586-589

Reuter G; Diehl HJ (1971) Guanidinderivate in *Leonurus sibiricus*. [Guanidine derivatives in *Leonurus sibiricus* L]. Die Pharmazie; 26: 777

Ritter M; Melichar K; Strahler S; Kuchta K; Schulte J; Sartiani L; Cerbai E; Mugelli A; Mohr FW; Rauwald HW; Dhein S (2009) Cardiac and Electrophysiological Effects of Primary and Refined Extracts from *Leonurus Cardiaca* L. (Ph.Eur.) Planta Med. efirst 21 November 2009 (in print)

Rodina LG (1968) [Determination of pharmacological activity of basis components of motherwort (*Leonurus quinquelobatus* L).] Farmatsia 17: 55-58.

Romanowski H (1969) Chromatographic isolation and analysis of an alkaloid of *Leonurus cardiaca*. Acta poloniae Pharmaceutica 17: 13-22

Romero-González RR; Avila-Núñez JL; Aubert L; Alonso-Amelot ME (2006) Labdane diterpenes from *Leonurus japonicus* leaves. Phytochemistry 67: 965-970

Satoh M, Satoh Y, Isobe K, Fujimoto Y (2003) Studies on the constituents of *Leonurus sibiricus* L. Chem. Pharm. Bull. 51: 341-342

Sattar AA, Bankova V, Kujumgiev A, Galabov A, Ignatova A, Todorova C, Popov S (1995) Chemical composition and biological activity of leaf exudates from some lamiaceae plants. Pharmazie 50: 62-65

Savona G, Piozzi F, Bruno M, Rodriguez B (1982) Diterpenoids from *Leonurus sibiricus*. Phytochemistry 21: 2699-2701

Schröder J (1685) Apotheke oder Höchst kostbarer Arzney-Schatz, Nürnberg, IV, 74 taken from Benedum (2006)

Schultz OE, Haack HJ (1961a) Isolierung und Versuche zur Konstitutionsaufklärung von drei Bitterstoffglykosiden aus *Leonurus cardiaca*. 1. Mitteilung. Arzneimittelforschung 11: 830-835

Schultz OE, Haack HJ (1961b) Isolierung und Versuche zur Konstitutionsaufklärung von drei Bitterstoffglykosiden aus *Leonurus cardiaca*. 2. Mitteilung. Arzneimittelforschung 11: 975-978

Schultz OE, Alhyane M (1973) Inhaltsstoffe von *Leonurus cardiaca* L. Scientia Pharmaceutica 41: 149-155

Schulze K, Diepenbrock F (1944) Kommentar zum Ergänzungsbuch 6. Ausgabe, Deutscher Apotheker Verlag, Berlin, Wien, 131-132

- Senatore F; De Feo V; De Simone F; Mscisz A; Mrugasiewicz K, Gorecki P (1991) Sterols from *Leonurus cardiaca* L. growing in different geographical areas. *Herba Polonica* 37. 3-7
- Shi BM; Shan AS (2007) Effects of Chinese herbs on lactation of rat and performance of off-spring. *Journal of Northeast Agricultural University (English Edition)*; 14: 22-26
- Shin HY; Kim SH; Kang SM; Chang IJ; Kim SY; Jeon H; Leem KH; Park WH; Lim JP; Shin TY (2009) Anti-inflammatory activity of Motherwort (*Leonurus sibiricus* L.). *Immunopharmacology and immunotoxicology*; 31: 209-213
- Sokolov SJ, Zamotaev IP (1984) [Handbook of Medicinal Plants (Phytotherapy)] (Russian), Publishing House Medicina, Moscow, 53-54
- Steinmetz EF (1954) Herba Leonuri cardiaceae in: *Materia Medica Vegetabilis*, Amsterdam, Nr. 805
- Stöger EA (2009) *Arzneibuch der Chinesischen Medizin – Monographien des Arzneibuchs der Volksrepublik China 2000 und 2005*, 12. Aktualisierungslieferung, Deutscher Apotheker Verlag, Stuttgart
- Sugiura S, Inoue S, Hayashi Y, Kishi Y, Goto T (1969) Structure and synthesis of Leonurine. *Tetrahedron* 25: 5155-5161
- Sun J; Huang SH; Zhu YC; Whiteman M; Wang MJ; Tan BK; Zhu YZ (2005) Anti-oxidative stress effects of herba Leonuri on ischemic rat hearts. *Life sciences*; 76: 3043-3056
- Sung SH; Ji SH; Seon AL; Bang YH; Kwan WH; Keum RZ; Rack SS; Jai SR; Kyong SL (2001) Isolation and quantitative analysis of leonurine from Leonuri Herba. *Korean Journal of Pharmacognosy*; 32: 322-326 (from abstract)
- Szocs D; Feszt G; Dogaru MT (1999) Antinociceptive effect of some Lamiaceae-species and their interactions with naloxone and verapamil. *Fundam Clin Pharmacol*; 13 (Suppl. 1): 211s
- Tao J; Zhang P; Liu G; Yan H; Bu X; Ma Z; Wang N; Wang G; Jia W (2009) Cytotoxicity of Chinese motherwort (YiMuCao) aqueous ethanol extract is non-apoptotic and estrogen receptor independent on human breast cancer cells. *Journal of ethnopharmacology*; 122: 234-239
- Tasdemir D, Calis I, Sticher O (1998) Labdane diterpenes from *leonurus persicus*. *Phytochemistry* 49: 137-143
- Tasdemir D; Brun R; Perozzo R; Doenmez AA (2005) Evaluation of antiprotozoal and plasmodial enoyl-ACP reductase inhibition potential of Turkish medicinal plants. *Phytotherapy Research* 19: 162-166
- Thomson WAR (1978) *Leonurus cardiaca*. In: Heilpflanzen und ihre Kräfte. Ein Ratgeber für Fragen der Gesundheitsmedizin auf natürlicher Basis. Lingen, Köln, 77, 125
- Tschesche R, Diederich A, Jha HC (1980) Caffeic acid and 4-rutinoside from *Leonurus cardiaca*. *Phytochemistry* 19: 2783
- Valentis UAB, Vilnius: letter to HMPC of July 7, 2009 and attached documents
- Van Eijk JL (1952) Phytochemisch onderzoek van *leonurus cardiaca* en *senecio vulgaris*. *Pharmaceutisch Weekblad* 87: 38-41
- Van Hellemont J (1986) Compendium de Phytotherapie. Brussels, Association Pharmaceutique Belge.; taken from McGuffin (1997)
- Wadt NSY, Ohara MT, Sakuda-kaneko TM, Bacchi EM (1996): Atividade antimicrobiana de *Leonurus sibiricus* L. *Rev Bras Farmacogn* 5: 167-174

Wang Z; Zhang PL; Ju Y (2004) Effect of leonurine on the activity of creatine kinase. Journal of Asian Natural Products Research; 6: 281-287

Weischer ML; Okpanyi SN (1994) Pharmakologie eines pflanzlichen Schlafmittels. [Experimental pharmacological investigation on the effects of a herbaceous sleep inducing drug.] Zeitschr. Phytotherapie 15: 257-262

Weiβ RF (1938) Leonurus cardiaca, eine neue herzwirksame Heilpflanze. Deutsche Med. Wochenschrift 64: 932-933

Weiss RF (1944) Die Pflanzenheilkunde in der ärztlichen Praxis, Hippokrates Verlag, Stuttgart, 109-110

Weiss RF (1974) Lehrbuch der Phytotherapie, 3. Aufl., Hippokrates Verlag Stuttgart, 191, 306

Weiss RF (1980) Lehrbuch der Phytotherapie, 4. Aufl., Hippokrates, Stuttgart 218-219, 342

Weiss RF, Fintelmann V (1997) Lehrbuch der Phytotherapie, 8. Auflage, Hippokrates, Stuttgart, 151, 196-197

Weiss RF, Fintelmann V (2009) Lehrbuch der Phytotherapie, 12. Auflage, Hippokrates, Stuttgart, 127, 166, 269

Wichtl M (Ed.) (2002): Teedrogen und Phytopharmaka, Wissenschaftliche Verlagsgesellschaft, Stuttgart, 384-385

Wichtl M (Ed.) (2009): Teedrogen und Phytopharmaka, Wissenschaftliche Verlagsgesellschaft, Stuttgart, 384-385

Widowitz U, Hödl G, Kunert O, Blunder M, Heuberger H, Bomme U, Torres-Londono P, Bauer R (2009) Two new isolated epimers seem to contribute to the bitter principle of *Leonurus japonicus* Houtt. Planta Med. 75: 57th International Congress and Annual Meeting of the Society for Medicinal Plant and Natural Product Research, Abstract PJ68

Widy-Tyszkiewicz E; Schminda R (1997) A randomized double blind study of sedative effects of phytotherapeutic containing valerian, hops, balm and motherwort versus placebo. Herba Polonica; 43: 154-159

Wittstein GC (1882): Handwörterbuch der Pharmakognosie des Pflanzenreichs, Eduard Trewendt, Breslau, 927

Xin H; Liu XH; Zhu YZ (2009) Herba leonurine [sic!] attenuates doxorubicin-induced apoptosis in H9c2 cardiac muscle cells. European Journal of Pharmacology; 612: 75-79

Xu CY; Chen SR; He WZ; Wu YB; Wu SX; Chen XG; Li SM (2002) [Leonurus heterophyllus injection in treating acute cerebral infarction.] Chinese Journal of New Drugs and Clinical Remedies/Zhongguo Xinyao Yu Linchuang Zazhi; 21: 271-274 (engl. abstract from Chinese article)

Yang X; Li J; Li X; She R; Pei Y (2006) Isolation and characterization of a novel thermostable non-specific lipid transfer protein-like antimicrobial protein from motherwort (*Leonurus japonicus* Houtt) seeds. Peptides; 27: 3122-3128

Yarnell E; Abascal K (2009) Plant coumarins: myths and realities. Alternative and Complementary Therapies; 15: 24-30

Yeung HW; Kong YC; Lay WP; Cheng KF (1977) The structure and biological effect of leonurine. A uterotonic principle from the Chinese drug, I-mu Ts'ao. Planta Medica; 31: 51-56

Yin J; Shi GG; Wang HL (2003) Effects of *Leonurus heterophyllus* sweet on haemorheology and thrombosis on rat with myocardial ischaemia. European Heart Journal; 24 (Abstract Supplement). 79

Yin J; Shi GG; Shen YJ; Zhang ZW; Luo XG; Wang XF; Wang HL (2008) Leonurus heterophyllus Sweet (Chinese Motherwort herb) extract inhibits tissue factor expression induced by thrombine on human umbilical vein endothelial cells. *Haematologica-The Hematology Journal*; 93 (Suppl. 1): 148

Zheljazkov VD; Jeliazkova EA; Kovacheva N; Dzhurmanski A (2008) Metal uptake by medicinal plant species grown in soils contaminated by a smelter. *Environmental and Experimental Botany*; 64: 207-216

Zitkevicius V; Savickiene N; Abdrachmanovas O; Ryselis S; Masteiková R; Chalupova Z; Dagilyte A; Baranauskas A (2003) Svino ir kadmio leistinu koncentraciju ivertinimas augalinese zaliavose ir is ju pagamintuose vaistuose. [Estimation of maximum acceptable concentration of lead and cadmium in plants and their medicinal preparations.] *Medicina* (Kaunas, Lithuania); 39 Suppl. 2: 117-121

Zou QZ; Bi RG; Li JM; Feng JB; Yu AM; Chan HP; Zhen MX (1989) Effect of motherwort on blood hyperviscosity. *American Journal of Chinese Medicine*; 17: 65-70