In the past, Mezeron root was used to relieve headache, toothache, gout, whooping cough, syphilis, constipation and worm infestation. It was used externally for joint pains and to increase circulation in the case of rheumatic complaints, skin conditions and conjunctivitis. The drug is known in old drug manuals as ^'Spanish fly plaster' or Drouotic plaster and recommended for various pain symptoms.

Homeopathic Uses: In homeopathic medicine, Daphne mezereon is used for skin conditions such as cradle cap, shingles, weeping eczema and encrusted, weeping blisters, as well as for neuralgia and pains in the bones.

PRECAUTIONS AND ADVERSE REACTIONS

External contact with the severely irritating toxic diterpenes of Daphne mezereon causes erysipeloid reddening of the skin, swelling, blister formation and shedding of the epidermis. Extended exposure leads to the formation of necroses. Contact with the eyes causes severe conjunctivitis. If taken internally, reddening and swelling of the oral mucous membranes, feeling of thirst, salivation, stomach pains, vomiting and severe diarrhea occur.

Resorption of the drug may cause headache, dizziness, stupor, tachycardia, spasms and possibly death through circulatory collapse. Cool wrappings and anesthetic salves are recommended for treatment of the skin injuries.

OVERDOSAGE

Poisoning resulting from ingestion of the drug should be treated with gastric lavage and calcium gluconate, IV. Administration of corticosteroids may also be indicated.

DOSAGE

Mode of Administration: The drug is seldom used today. Used injjemeppathic dilutions, topically and internally.

Homeopathic Dosage: 5 drops, l tablet or 10 globules every 30 to 60 minutes (acute) or l to 3 times daily (chronic); parenterally: l to 2 ml sc acute, 3 times daily; chronic: once a day (HABl).

Storage: The effect fades if it is stored for too long. Therefore, do not store for a period of more than 2 years.

LITERATURE

Evans B, In: Evans FJ:Naturally Occuring Phorbolesters, CRC Press Inc., Boca Raton, Florida. 1986.

Kupchan SM, Baxter RL, (1974) Science 187:652.

Nyborg J, La Cour, T, (1975) Nature 257:824.

Ronlan A, Wickberg B, Tetrahedron Lett 4261. 1970.

Schildknecht H et al., (1970) Chem Ztg 94:347.

Schindler H, PM 10:232. 1962.

Stout GH et al., (1970) J Am Chem Soc 92:1070.

Further information in:

Frohne D, Pfander HJ, Giftpflanzen - Ein Handbuch fur Apotheker, Toxikologen und Biologen, 4. Aufl., Wiss. Verlagsges. mbH Stuttgart 1997.

Kern W, List PH, Horhammer L (Hrsg.), Hagers Handbuch der Pharmazeutischen Praxis, 4. Aufl., Bde 1-8, Springer Verlag Berlin, Heidelberg, New York, 1969.

Lewin L, Gifte und Vergiftungen, 6. Aufl., Nachdruck, Haug Verlag, Heidelberg 1992.

Madaus G, Lehrbuch der Biologischen Arzneimittel, Bde 1-3, Nachdruck, Georg Olms Verlag Hildesheim 1979.

Roth L, Daunderer M, Kormann K: Giftpflanzen, Pflanzengifte, 4. Aufl., Ecomed Fachverlag Landsberg Lech 1993.

Teuscher E, Lindequist U, Biogene Gifte - Biologie, Chemie, Pharmakologie, 2. Aufl., Fischer Verlag Stuttgart 1994.

Wagner H, Wiesenauer M, Phytotherapie. Phytopharmaka und pflauzliche Homoopathika, Fischer-Verlag, Stuttgart, Jena, New York 1995.

Milk Thistle

Silybum marianum'

TRADE NAMES

Milk Thistle (available from numerous manafacturers), Silymarin, Milk Thistle Extract, Milk Thistle Super Complex, Milk Thistle Phytosome, Alcohol Free Milk Thistle Seed, Milk Thistle Extract, Milk Thistle Plus, Silymarin Milk Thistle, Milk Thistle Power, Time Release Milk Thistle Power, Thisilyn Standardized Milk Thistle Extract

DESCRIPTION

Medicinal Parts: The medicinal parts of the plant are the ripe seeds.

Flower and Fruit: The inflorescences are large, solitary and purple. They consist of somewhat nodding, composite flower heads. The perigone is globular. The inner tepals taper to a slender point, and the outer tepals are tough at the base, then spread and terminate at a horny tip. There are only tubular florets. The fruit is brown, spotted and glossy, with a white tuft of hair.

Leaves, Stem and Root: The plant grows from 70 to 150 cm high with an erect stem. The leaves are arranged in different levels with the lower leaves indented-pinnatisect, and the upper ones lanceolate and clasping. There are white spots along the ribs of the leaf and yellow thorns at the margin.

Habitat: The plant is indigenous to Europe.

Other Names: Marian Thistle, Mediterranean Milk Thistle, Mary Thistle

ACTIONS AND PHARMACOLOGY

COMPOUNDS: MILK THISTLE HERB

Flavonoids: in particular, apigenin-, luteolin- and kaempferol-7-0-glycosides, apigenin-4,7'-di-0-glucoside, kaempferol-7-0-glucoside-3-sulfate

Steroids: sterols, including beta-sitosterol, beta-sitosterol glucoside

Polyynes

Organic Acids: fumaric acid (3.3%)

(Silymarin is absent; it is localized only in the seed case)

EFFECTS: MILK THISTLE HERB

The cholagogue effect of the drug has not been documented.

COMPOUNDS: MILK THISTLE SEED

Silymarin (flavonolignan mixture, 1.5-3%): chief components silybin A, silybin B (mixture known as silibinin), isosilybin A, isosilybin B, silychristin, silydianin

Flavonoids: apigenin, chrysoeriol, eriodictyol, naringenin, quercetin, taxifolin

Fatty oil (20-30%)

EFFECTS: MILK THISTLE SEED

Hepatoprotective Effects

The hepatoprotective activity of the seed is from silymarin, in particular, silychristin and silydianin. The compounds seem to inhibit the entrance of toxins and block toxin-binding sites through alteration of the liver cell's outer membrane. (Hikino, 1994; Leng-Peschlow, 1996). The hepatoprotective effect of silibinin also involves different functioas=ofJthe Kupffer cells. Silibinin decreases production of superoxide-^anfen radicals and nitric,-oxide-, (free-radical scavenger or antioxidant) by the Kupffer cells. Silibinin also inhibits leukotriene formation by the Kupffer cells (Dehmlow, 1996). Silymarin increases glutathione production by the liver, intestines and stomach. Glutathione is used for detoxification cells in the liver (Valenzuela, 1989). Silibinin decreases hepatic and mitochondrial glutathione oxidation induced by iron overload and is a mild chelator of iron (Pietrangelo, 1995).

Protective Effects

The seed exerts an anti-inflammatory effect through inhibtion of leukotriene production by silymarin (Leng-Peschlow, 1996). A renoprotective effect of the herb on kidney cells damaged by acetaminophen, cisplatin and vincristin was demonstrated in a recent study. Silibinin and silychristin demonstrated remarkable stimulatory effects on proliferation rate, biosynthesis of protein and DNA, and activity of the enzyme lactate dehydrogenase in kidney cells (Sonnenbichler, 1999). Silibinin reduces intracellular and secreted forms of prostate-specific antigen (PSA) levels and inhibits cell growth via a Gl arrest in cell cycle progression in hormone-refractory prostate carcinomas. Silibinin-induced Gl arrest decreases the kinase activity of cyclin-dependent kinases (CDKs) and associated cyclins for an anticarcinogenic effect (Zi, 1999; Zi, 1998)

Liver Regenerative Effects

Silymarin stimulates RNA polymerase I in the cell nucleus of the hepatocytes, resulting in an increase of ribosomal protein synthesis and the regenerative ability of the liver. This mechanism is of particular importance in the antidote effect against death-cap mushroom poisoning since the poison which it contains, alpha-Amanitin, inhibits this enzyme in the cell nucleus. The drug also has a cholagogic effect.

CLINICAL TRIALS

Hepatoprotection

A double-blind, randomized, placebo-controlled trial was conducted to determine the hepatoprotective effect of silymarin in 170 cirrhosis patients. The patients were given either 140 mg silymarin three times daily or a placebo. After treatment for two years, biochemical markers did not change significantly. After a four-year analysis, treatment was seen most effective in patients with alcoholic cirrhosis and Child's A group classification of portal hypertension. The drug was ineffective in patients with Child's B and C group hypertension (Ferenci, 1989).

The effect of silymarin in 200 alcoholic patients with cirrhosis of the liver was demonstrated in a controlled, double-blind, randomized and multicenter trial. The study was comparing 450 mg of silymarin (150 mg/ three times per day) with placebo. Patient survival was similar in the silymarin and placebo treatment group after 2 years of therapy. No relevant side effects were observed in either group, and the results indicated that silymarin has no effect on survival and the clinical course in alcoholics with liver cirrhosis (Pares, 1998).

Silymarin 420 mg per day was compared to placebo in a double-blind, controlled study to determine the effect on chemical, functional and morphological alterations of the liver. The study involved 106 patients with relatively slight and subacute liver disease induced by alcohol abuse. The patients were selected on the basis of elevated serum transaminase levels. After 4 weeks, there was a highly significant decrease of S-SGPT and S-SGOT in the silymarin treatment group. There was also a decrease in the serum total and conjugated bilirubin with the silymarin treatment group, although the decrease was not significant. Histological

changes normalized significantly more in the silymarin treatment group (Salmi, 1982).

INDICATIONS AND USAGE

MILK THISTLE HERB

Unproven Uses: Preparations of Milk Thistle herb are used as a stimulant, for functional disorders of liver and gallbladder including jaundice, gallbladder colic and diseases of the spleen. The herb was formerly used as a malaria treatment, emmenagogue and for uterine complaints.

MILK THISTLE SEED

Approved by Commission E:

- Dyspeptic complaints
- Liver and gallbladder complaints

The drug is used for toxic liver damage, adjunctive treatment in chronic inflammatory liver disease and hepatic cirrhosis.

Unproven Uses: The drug is also used as an antidote to death-cap mushroom poisoning.

PRECAUTIONS AND ADVERSE REACTIONS

MILK THISTLE HERB AND SEED

No health hazards or side effects are known in conjunction with the proper administration of designated therapeutic dosages. Episodes of severe sweating, abdominal cramping, nausea, vomiting, diarrhea and weakness were recently reported in Australia, but the reaction was found to be due to a substance in the Milk Thistle product other than silybin (Adverse Drug Reaction Advisory Committee, 1999).

Drug Interactions: The concomitant use of silymarin and butyrophenones or phenothiazines results in a reduction of lipid peroxidation (Palasciano, 1994). Silymarin has an atagonistic effect with yohimbine and phentolamine when given siflffulaneously (Di Carlo, 1993).

DOSAGE

MILK THISTLE HERB

Preparation: An infusion is prepared by pouring boiling water over 1/2 teaspoonful of the drug and then straining after 5 to 10 minutes.

Daily Dosage: The average dose of the infusion is 2 to 3 cups daily.

MILK THISTLE SEED

Mode of Administration: Comminuted drug for infusions and extracts; tinctures for liquids and solid forms.

How Supplied:

Capsules—70 mg, 100 mg, 140 mg, 150 mg, 175 mg, 180 mg, 500 mg, 540 mg, 1000 mg, 1050 mg

Liquid—1:1, 1:2

Tablet—50 mg, 500 mg

Preparation: To prepare an infusion, add 3 gm of the drug to cold water and bring to a boil. Drain after 10 to 20 minutes.

Daily Dosage: For liver dysfunction or ailments, the daily dosage has been effective and well tolerated at 140 to 420 mg divided in 2 to 3 doses (Ferenci, 1989; Frerick, 1990; Pares, 1998; Schuppan, 1998). The average dose of silymarin was approximately 33 milligrams/kilogram/day for cyclopeptide mushroom poisoning. Silymarin administered up to 48 hours after mushroom ingestion appears to be effective in preventing severe liver damage in Amanita phalloides poisoning (Hruby, 1983).

Although products are usually standardized to 70% to 80% (not milligrams) of silymarin, the silymarin concentrations may vary without government regulation (Flora et al, 1998).

Storage: Store away from direct light, heat and moisture; keep at room temperature.

LITERATURE

MILK THISTLE HERB

Ahmed AA et al., PH 28:1751. 1989.

DAZ 25:1427. 1990.

Khafagy SM et al., Sci Pharm 49:157. 1981.

Kern W, List PH, Horiiammer L (Hrsg.), Hagers Handbuch der Pharmazeutischen Praxis, 4. Aufl., Bde. 1-8, Springer Verlag Berlin, Heidelberg, New York, 1969.

Madaus G, Lehrbuch der Biologischen Arzneimittel, Bde 1-3, Nachdruck, Georg Olms Verlag Hildesheim 1979.

Mericli AH, PM 54:44. 1988.

Wichtl M (Hrsg.), Teedrogen, 4. Aufl., Wiss. Verlagsges. Stuttgart 1997.

MILK THISTLE SEED

Baumann J, (1975) Uber'die Wirkung von Chelidonium, Curcuma, Absinth und Carduus marianus auf die Galle- und Pankreassekretion bei Hepatopathien. Med Mschr 29:173.

Benda I, Zenz W, (1973) Wien Med Wschr 123:512.

Desplaces A et al., (1975) Arzneim Forsch 25, 89.

Dehmlow C, Erhard J, de Groot H, Inhibition of Kupffer cell functions as an explanation for the hepatoprotective properties of silibinin. Hepatology 1996 Apr,23(4):749-54.

Devault RL, Rosenbrook W, (1973) J Antibiotic 26:532.

Hruby K et al., (1983) Hum Toxicol 2(2):183.

Neu R, (1960) Arch Pharm 293:269.

Pelter A, Hansel R, (1968) Tetrahedron Letters 19:2911.

Poser G, (1971) Arzneim Forsch 21:1209.

Qiu SJ et al., (1981) Chin J Cardiol 9:61.

Tuchweber B et al., (1973) J Med 4:327.

Vogel G et al., (1984) Toxicol Appl Pharmacol 51:265.

Wagner H et al., (1971) Tetrahedron Letters 22:1985.

An adverse reaction to the herbal medication milk thistle (Silybum marianum). Adverse Drug Reactions Advisory Committee. Med J Aust 1999 Mar l;170(5):2l8-9.

Arnone A, Meriini L, Zanarotti A, (1979) Constituents of Silybum 4Qarianum, Structure of isosilybin and stereochemistry of isosilybin. J Chem Soc (Chem Commun):696-697.

Benda L, Dittrich H, Ferenzi P. Frank H. Wewalka F, (1980) The influence of therapy with silymarin on the survial rate of patients with liver cirrhosis. Wien Klin Wschr 92(19):678-683.

Bode JCh, (1986) Arzneimittel fiir die Indikation "Lebererkrankungen". In: Dolle W, Miiller-Oerlingshausen B, Schwabe U (Hrsg.), Grundlagen der Arzneimitteltherapie. Entwicklung. Beurteilung und Anwendung von Arzneimitteln. B.I.- Wissenschaftsverlag, Mannheim Wien Zurich, S 202-211.

Bode JCh, 0981) Die alkoholische Hepatitis, ein KrankheiLsspektrum. Internist 220:536-545.

Di Carlo G, Autore G, Izzo AA et a!., Inhibition of intestinal motility and secretion by flavonoids in mice and rats: structure-activity relationships. J Pharm Pharmacol 1993; 45:1054-1059.

Dolle W, Schwabe U, (1988) Leber- und Gallenwegstherapeutika. In: Schwabe U, Paffrath D (Hrsg.), Arzneiverordnungsreport 88, Gustav Fischer. Stuttgart New York. S 242-253.

Feher J, Deak G, Muezes G, Lang I, Niederland V, Nekam K, Karteszi M, (1989) Hepatoprotective activity of silymarin legalon therapy in patients with chronic alcoholic liver disease. Orv Hetil 130(51):2723-2727.

Frerick H, Kuhn U, Strenge-Hesse A et al. Silymarin - ein Phytopharmakon zur Behandlung von toxischen Leberschaden.Der Kassenarzt 1990;33/34:36-41.

Ferenci P, Dragosics B, Dittrich H, Frank H, Benda L, Lochs H, Meryn S, Base W, Schneider B, (1989) Randomized controllsd^ttial of silymarin treatment in patients with cirrhosis of the liver. J .Hepatol 9(1):105-113. _ .. ^

Fintelmann V, Albert A, (1980) Nachweis der therapeutischen Wirksamkeit von Legalon bei toxischen Lebererkrankungen im Doppelblindversuch. Therapiewoche 30(35):5589-5594.

Flora K, Hahn M, Rosen H et al., Milk Thistle (Silybum marianum) for the therapy of liver disease. Am JGastroenterol 1998; 93:139-143.

Hahn G, Lehmann HD, Kiirten M et al., (1968) Zur Pharmakologie und Toxikologie von Silymarin, des antihepatotocischen Wirkprinzips aus Silybum marianum (L.) Gaertn. Arzneim Forsch/Drug Res 18:698-704.

Hruby K, Fuhrmann M, Csomos G, Thaler H, (1983) Pharmakotherapie der Knollenblatterpilzvergiftung mit Silibinin. Wien Klein Wschr 95(7):225-231.

Hruby K, Csomos G, Fuhrmann M, Thaler H, Chemotherapy of Amanita phalloides poisoning with intravenous silibinin. Hum Toxicol 1983 Apr,2(2): 183-95.

Kalmar L, Kadar J, Somogyi A et al., Silibinin (Legalon-70) enhances the motility of human neutrophils immobilized by formyl-tripeptide, calcium ionophore, lymphokine and by normal human serum. Agents Actions 1990; 29:239-246.

Koch H, (1980) Leberschutz-Therapeutika. Pharmazie in unserer Zeit 9:33-44:65-74.

Leng-Peschlow E, Properties and medical use of flavonolignans (silymarin) from Silybum marianum. Phytother Res 1996; 10(suppl):S25-S26.

Leng-Peschlow E, Strenge-Hesse A, (1991) Die Mariendistel (Silybum marianum) und Silymarin als Lebertherapeutikum. Z Phytother 12:162-174.

Lorenz D, Mennicke WH, Behrendt W, (1992) Untersuchungen zur Elimination von Silymarin bei cholecystektomierten Patienten. Planta Med 45:216-233.

Martines G, Copponi V, Cagnetta G, (1980) Aspetti del danno epatico dopo somministrazione sperimentale di alcuni farmaci. Arch Sci Med 137:367-386.

Martini GA, (1988) Hepatozellulare Erkrankungen, Leberkrankheiten. In: Riecker G (Hrsg.), Therapie innerer Krankheiten, Springer, Berlin Heidelberg New York, S 638-652.

Marugg D, Reutter FW, (1985) Die Amanita-phalloides-Intoxikation. Moderne therapeutische Mafinahmen und klinischer Verlauf. Schweiz Rundschau Med (Praxis) 14(37):972-982.

Mennicke WH, (1975) Zur biologischen Verfiigbarkeit und Verstoffwechselung von Silybin. Dtsch Apoth Ztg 115(33): 1205-1206.

Palasciano G, Portinacasa P, Palmieri V et al., The effect of silymarin on plasma levels of malondialdehyde in patients receiving long-term treatment with psychotropic drugs. Curr Ther Res 1994; 55:537-545.

Pares A, Planas R, Torres M et al., Effects of silymarin in alcoholic patients with cirrhosis of the liver, results of a controlled, double-blind, jandomized and multicenter trial. J Hepatol 1998 Apr;28(4):615-21.

Peeters H (Ed.), (1976) Phosphatidylcholine. Biochemical and Clinical Aspects of Essential Phospholipids. Springer Verlag, Berlin Heidelberg New York.

Rauen HM, Schriewer H, (1971) Die antihepatotoxische Wirkung von Silymarin bei experimentellen Leberschaden der Ratte durch Tetrachlorkohlenstoff, D-Galaktosamin und Allylalkohol. Arzneim Forsch/Drug Res 21:1194-1201.

Reuter HD, (1992) Spektrum Mariendistel und anderd leber- und gallewirksame Phytopharmaka. In: Bundesverband Dtschr Arzte fur Naturheilverfahren (Hrsg.) Arzneimitteltherapie heute. Aesopus Verlag, Basel.

Salmi HA, Sama S, (1982) Effect of silymarin on chemical, functional and morphological alterations of the liver. A double-blind controlled study. Scand J Gastroenterol 17(4):517-521.

Schulz HU, Schurer M, Krumbiegel G, Wachter W, Weyhenmeyer R, Seidel G, (1995) Untersuchungen zum Freisetzungsverhalten und zur Bioaquivalenz von Silymarin-Praparaten. Arzneim Forsch/Drug Res 45:61-64.

Schuppan D, Strosser W, Burkard G, Walosek G et al., Verminderung der Fibrosierungsaktivitat durch Legalon bei chronischen Lebererkrankungen

Z Allgemeinmed 1998; 11/12:577-584.

Sonnebichler J, Zetl I, (1984) Untersuchungen zum Wirkungsmechanismus von Silibinin, Einflup* von Silibinin auf die Synthese ribosomaler RNA, mRNA und tRNA in Rattenlebern in vivo. Hoppe-Seyler's Physiol Chem 365:555-556.

Sonnenbichler J, Zetl I, (1986) Biochemical effects of the flavonolignane silibinin in RNA, protein and DANN synthesis of rat livers. Prog Clin Biol Res 213:319-331.

Sonnenbichler J, Zetl I, (1987) Stimulating influence of a flavonolignane on proliferation, RNA synthesis and protein Synthesis in liver cells. In, Okoliczanyi L, Csomos G, Crepaldi G (Eds.), Assessment and management of hepatobiliary disease. Springer, Berlin Heidelberg New York, S 265-272.

Sonnenbichler J, Zetl I, (1988) Specific binding of a flavonolignane to an estradiol receptor. In: Plant flavonoids in Biology and Medicine II, Biochemical, cellular, and medicinal properties. Alan R Liss, New York, S 369-374.

Sonnenbichler J, Scalera F, Sonnenbichler I et al., Stimulatory effects of silibinin and silicristin from the Milk Thistle Silybum marianum on kidney cells. J Pharmacol Exp Ther 1999 Sep;290(3): 1375-83.

Varis K, Salmi HA, Siurala M, (1978) Die Therapie der Lebererkrankung mit Legalon; eine kontrollierte Doppelblindstudie. In: Aktuelle Hepatologie, III. Internationales Symposium Koln 15.-17. November 1978. Hanseatisches Veriagskontor. Lubeck, S 42-43.

Valenzuela A, Aspillaga M, Vial S, Guerra, Selectivity of silymarin on the increase of the glutathione content in different tissues.#f=the.rat. Planta Med 1989 Oct;55(5):420-2.

Vogel G, (1980) The anti-amanita effect of silymarin. In: Faulstich et al., (Eds.), Amanita toxins and poisoning. Witzstrock, Baden-Baden Koln New York, S 180-187.

Wagner H, Seligmann O, Seilz M, Abraham D, Sonnenbichler J, (1976) Silydianin und Silychristin, zwei isomere Silymarine aus Silybum marianum L. Gaertn. (Mariendistel). Z Naturforsch 31b:876-884.

Zi X, Agarwal R, Silibinin decreases prostate-specific antigen with cell growth inhibition via Gl arrest, leading to differentiation of prostate carcinoma cells: implications for prostate cancer intervention. Proc Natl Acad Sci U S A 1999 Jun 22;96(13):7490-5.

Zi X, Feyes DK, Agarwal R, Anticarcinogenic effect of a flavonoid antioxidant, silymarin, in human breast cancer cells MDA-MB 468: induction of Gl arrest through an increase in Cipl/p21 concomitant with a decrease in kinase activity of cyclin-dependent kinases and associated cyclins. Clin Cancer Res 1998 Apr;4(4): 1055-64.

Further information in:

Kern W, List PH, Horhammer L (Hrsg.), Hagers Handbuch der Pharmazeutischen Praxis, 4. AufL, Bde 1-8, Springer Verlag Berlin, Heidelberg, New York, 1969.

Madaus G, Lehrbuch der Biologischen Arzneimittel, Bde 1-3, Nachdruck, Georg Olms Verlag Hildesheim 1979.

Roth L, Daunderer M, Kormann K, Giftpflanzen, Pflanzengifte, 4. AufL, Ecomed Fachverlag Landsberg Lech 1993.

Schulz R, Hansel R, Rationale Phytotherapie, Springer Verlag Heidelberg 1996.

Steinegger E, Hansel R, Pharmakognosie, 5. AufL, Springer Verlag Heidelberg 1992.

Teuscher E, Biogene Arzneimittel, 5. AufL, Wiss. Verlagsges. mbH Stuttgart 1997.

Wagner H, Wiesenauer M, Phytotherapie. Phytopharmaka und pflanzliche Homoopathika, Fischer-Verlag, Stuttgart, Jena, New York 1995.

Wichd M (Hrsg.), Teedrogen, 4. AufL, Wiss. Verlagsges. Stuttgart 1997.

Monarda didyma

See Oswego Tea

Monarda Punctata

See Horsemint

Moneywort

Lysimachia nummularia

DESCRIPTION

Medicinal Parts: The medicinal parts are the fresh or dried whole flowering plant.

Fruit and Flower: The flowers are solitary or in pairs. The leaf axils have 5 free, almost cordate sepals. The corolla is rotate, divided into 5 and fused at the base. It is rich yellow and spotted with dark red glands on the inside. There are 5 glandular-haired stamens fused at the base and 1 ovary. The fruit is a 4- to 5-mm long globular capsule. The seeds are triangular, blackish-brown, warty and 1.5 mm long.

Leaves, Stem and Root: The plant is a perennial. The stem is a runner-like creeper, lightly branched, quadrangular, glabrous to slightly pubescent with roots at the nodes. It grows I from 10 to 45 cm. The leaves are entire-margined, crossed-