



Egyptian Herbal Monograph

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Volume 3

Herbal Formulations Used in Egypt

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Milk thistle, Dandelion, Echinaceae

شوك الجمل / هندباء / إشنسيا

1. Names & Synonyms

Milk thistle (1)

***Silybum marianum* L. Gaertn. (2).**

Family: Compositae (Asteraceae) (2).

Syns.: *Carduus marianus* L. (2).

Arabic: Shawk Sennari شوك سناري, Shok El-Gamal شوك الجمل (3).

English: Milk thistle and St. Mary's thistle (3).

Dandelion

***Taraxacum officinale* Weber**

Family: Asteraceae/Compositae (3 - 7).

Syns.: *Leontodon taraxacum* L., *Taraxacum vulgare* (Lam.) Schrank, *T. campyloides* G. E. Haglund. (1-2).

Arabic: Handebaa, Hindbeh, Hindiba هندباء

English name: Lion's Tooth (6, 8 -10), Common Dandelion (8, 9), Dandelion (1).

Echinacea (1-2)

***Echinacea purpurea* L. Moench.**

Family: Asteraceae (Compositae).

Syns.: *Echinacea intermedia* Lindl., *E. purpurea* (L.) Moench var. *arkansana* Steyerl., *E. purpurea* var. *purpurea* f. *liggettii*., *E. speciosa* Paxt., *Brauneria purpurea* (L.) Britton, *Rudbeckia purpurea* L., *R. hispida* Hoffm., *R. serotina* Sweet.

Arabic: Echinacea إشنسيا

English name: Purple coneflower.



2. Parts used for medicinal purpose

Milk thistle: Dried ripe fruits, freed from the pappus (1)

Dandelion: Leaves, roots and root with herb (whole plant) (3 - 7)

Echinacea: - Fresh or dried herb (aerial parts) (1-2), Rhizome/ root (2-3)

3. Major chemical constituents

Milk thistle (2,3,4-6)

- **Flavonolignans:** Silymarin mixture mainly (silybin A, silybin B, isosilybin A, isosilybin B, silychristin, isosilychristin, silydianin).
- **Flavonoids:** Taxifolin, apigenin, kaempferol and their derivatives.
- **Fixed oil:** Linoleic, oleic, palmitic and stearic acids.
- **Sterols:** Tocopherol (vitamin E) and phospholipids.
- **Others:** Mucilage, sugars, amines and saponins.

Dandelion

Generally, dandelion plant is rich in polysaccharides, phenolic acids, flavonoids, terpenoids, minerals (particularly potassium), amino acids, and vitamins (9, 11).

Roots:

- **Polysaccharides:** Inulin (9, 11).
- **Phenolic acids:** Chicoric, chlorogenic, caffeic, monocaffeoyltartaric, hydroxycinnamic, synergic, vanillic and *p*-hydroxyphenyl acetic acids (9, 11).
- **Sesquiterpene lactones:** 4,11 β , 13, 15''-Tetrahydroridentin B and taraxacolide-Oglucopyranoside (7, 12), 11,13-dihydrolactucin and ixerin D (13), and taraxinic acid Dglucopyranoside, its 11,13-dihydro-derivative (7) and ainslioside (12 - 14).
- **Minerals:** Mainly potassium (15).
- **Others: Sterols/Triterpenes:** Taraxasterol, β -taraxasterol, their acetates and their 16-hydroxy derivatives arnidol and faradiol, β -sitosterol, β -



sitosterol-Dglucopyranoside and stigmasterol, and β -amyrin (12, 16, 17). A Triterpenoid: 3β hydroxylup-18(19)-ene-21-one in fresh roots (13).

Leaves:

- **Phenolic acids:** Chicoric, caffeic and chlorogenic acids (9).
- **Flavonoids:** Luteolin, quercetin, apigenin, and their glycosides (9).
- **Sesquiterpene lactones:** Taraxinic acid β -D-glucopyranoside and 11β , 13dihydrataraxinic acid (18).
- **Coumarins:** Cichoriin and aesculin (9).
- **Minerals:** Mainly potassium (15).
- **Others:** Polysaccharides and ascorbic acid (9).

Echinacea

Root:

- **Phenylpropanoids: Caffeic acid esters;** cichoric acid, caftaric acid, chlorogenic and isochlorogenic acids and **caffeic acid glycosides;** echinacoside, verbascoside, caffeoylechinoside (4).
- **Alkamides:** Isobutylamides of straight-chain fatty acids with olefinic and/or acetylenic bonds contain mainly 2,4-dienoic units (2,4).
- **Polysaccharides:** Methylglucuronarabinoxylan, rhamnourabinogalactan, xyloglucan and glycoproteins; arabinogalactan-protein (protein has high concentrations of serine, alanine and hydroxyproline) (2).
- **Others: Polyacetylene (volatile oil components):** Alkylketones; (2,4) saturated pyrrolizidine-type **alkaloids** (tussilagine and isotussilagine) (2,4); **flavonoids** (quercetin, kaempferol, isorhamnetin and their glycosides; betaine, fatty acids, simple sugars, sterols and vanillin (2).

Herb/aerial parts:

- **Phenylpropanoids: Caffeic acid esters;** cichoric acid, caftaric acid, chlorogenic and isochlorogenic acids, and **caffeic acid glycosides;** echinacoside, verbascoside, caffeoylechinoside (4).



- **Phenolic acids:** *p*-coumaric, *p*-hydroxybenzoic and protocatechuic acids; betaine (2).
- **Flavonoids:** quercetin, kaempferol, isorhamnetin and their glycosides (2,5).
- **Alkamides:** Isobutylamides of straight-chain fatty acids with olefinic and/or acetylenic bonds contain mainly 2,4-dienoic units (2,4).
- **Polysaccharides:** Methylglucuronarabinoxylan, rhamnourabinogalactan, xyloglucan and glycoproteins; arabinogalactan-protein (protein has high concentrations of serine, alanine and hydroxyproline) (2).
- **Others: volatile oil components;** borneol, bornyl acetate, germacrene D and caryophyllene (2,4), saturated pyrrolizidine-type alkaloids (tussilagine and isotussilagine) (2,4), anthocyanins, fatty acids, simple sugars, sterols and vanillin (2).

4. Medicinal Uses (Indications)

- A) Support the liver function, after serious conditions have been excluded by physician.
- B) Dyspeptic complaints and symptomatic relief of digestive disorders (such as feeling of abdominal fullness, flatulence, and slow digestion) and temporary loss of appetite.

5. Herbal preparations correlated to medicinal use

Combination of milk thistle dry extract (Extraction solvent: water –ethanol), dandelion extract (Extraction solvent: water –ethanol) and echinacea dry extract (Extraction solvent: water-ethanol)

Herbal preparations are in pharmaceutical dosage forms. The pharmaceutical form should be described by the pharmacopoeia full standard term.

6. Posology and method of administration correlated to medicinal use

Adults and elderly:

Combination of 175 mg of milk thistle extract, 50 mg of dandelion extract and 100 mg of echinacea extract, 3 times daily after meals.

Duration of use



- If the symptoms persist longer than 2 weeks during the use of the medicinal product, a doctor or a pharmacist should be consulted.
- The drug should be used for a maximum of 8 weeks or as the physician prescribed.

Method of administration: Oral use.

7. Contraindications.

- Hypersensitivity to the active substance or to other plants of the same families.
- Hormone-sensitive conditions such as breast, uterine and ovarian cancers, endometriosis or uterine fibroids. (18,19).
- Obstructions of bile ducts, cholangitis, liver diseases, gallstones, active peptic ulcer and any other biliary diseases (2,7,9).
- The use in patients have renal failure, diabetes or heart failure should be avoided because of possible risks due to hyperkalemia (6,7).
- Progressive systemic disorders, collagen disease, tuberculosis, immunodeficiencies (HIV/AIDS), immunosuppression diseases of white blood cell system, and autoimmune diseases such as lupus erythematosus and multiple sclerosis (12,14,22).

8. Special warnings and precautions for use

- If the symptoms worsen during the use of the medicinal product, a doctor or a pharmacist should be consulted.
- If complaints or symptoms such as fever, dysuria, spasms or blood in urine occur during the use of the medicinal product, a doctor or a pharmacist should be consulted (6-8).
- The use in children and adolescents under 18 years of age is not recommended (12,20).
- If icterus or a change in colour of urine or stool appears, a doctor should be consulted immediately (21).
- Patients with conditions where reduced fluid intake is advised by a medical doctor, the product is not recommended (8).



- There is a possible risk of allergic reactions in sensitive individuals. those patients should consult their doctor before using the product (14).
- There is a possible risk of anaphylactic reactions in atopic patient. atopic patient should consult their doctor before using the product (14).
- The product should not be used for longer than 8 weeks without a 3-week rest period (12).

9. Interactions with other medicinal products and other forms of interaction (12)

- Antacids, H2-blockers, proton pump inhibitors: it may decrease their action.
- Anticoagulants, antiplatelets, NSAIDs, salicylates: it may increase bleeding when used with these products.
- Antihypertensives, insulin, antidiabetics and hypoglycemic herbs: it may increase their effects; concurrent use should be avoided.
- Diuretics and diuretic herbs: it may increase diuresis when used concurrently with diuretics, leading to fluid loss and electrolyte imbalances; concurrent use should be avoided.
- Lithium: Toxicity may occur as a result of sodium excretion if the product is used concurrently with lithium.

Lab test:

- AST, ALT, alkaline phosphatase, APTT, INR, PT: Dandelion may increase these levels.
- Blood glucose: Dandelion may decrease blood glucose levels.
- It may decrease the effects of immunosuppressants, protease inhibitors, corticosteroids and should not be used immediately before, during, or after transplant surgery.
- It may increase ALT, AST, lymphocyte counts, serum immunoglobulin E (IgE), blood erythrocyte sedimentation rate (ESR).
- High doses interfere with sperm enzyme activity (23).



10. Fertility, pregnancy and lactation

- Safety during pregnancy and lactation has not been established. In the absence of sufficient data, the use during pregnancy and lactation is not recommended (6-8,14,18,19).
- No fertility data available.

11. Effects on ability to drive and use machines

- No studies on the effect on the ability to drive and use machines have been performed.

12. Undesirable effects

- Adverse effects are mainly transient, non-serious, gastrointestinal complaints. It is stated that the product may occasionally produce a mild laxative effect (2).
- Hypersensitivity reactions may occur (6-8, 12,14) including anaphylaxis and pseudoallergic contact dermatitis may occur. Cross-reactivity has been reported in individuals with an allergy to the pollen of other members of Asteraceae family (9).
- If adverse effects occur, a doctor or a pharmacist should be consulted.

13. Overdose

No case of overdose has been reported.

14. Relevant biological activities

Not required as per Egyptian guidelines for registration of herbal medicines.

15. Additional information

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16. Date of compilation/last revision



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