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Pharmacopoeial wild medicinal plants

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***Urginea maritima* L. Baker** بصل العنصل

1. Names & Synonyms (1-3)

***Urginea maritima* L. Baker**

Family: Hyacinthaceae (Liliaceae)

Syns.: *Scilla maritima* L., *Urginea scilla* (Steinh.), *Drimia maritima* (L.) Stearn (3)

Arabic: Basal Far'aon بصل فرعون , Onsol عنصل , Basal Onsol بصل عنصل , Ashkil اشقيل , Askil أسقيل , Askal أسقال (4)

English: Sea onion, Squill, Medicinal squill, White squill.

2. Geographical distribution

Mediterranean coastal strip and Sinai (3).

3. Parts used for medicinal purposes

The dried fleshy scales of the bulbs of *U. maritima* (4) collected after withering of leaves; known as white squill (2) [Not to be confused with red squill used as rodenticide].

4. Major chemical constituents

Cardiac glycosides "Bufadienolides" (bulb):

- Scillaren A, proscillaridin A, scilliroside, scillaridin A, scilliglaucoside, scillipheoside, glucoscillipheoside, scillicyanoside, glucoscillaren A, scillarenin (5-7).

- Forty-one compounds were isolated from the Egyptian squill from which sixteen were glycosides; 16β hydroxy-scillarenin, 16β -*O*-acetyl-scillarenin, 12β-hydroxy-5α-4,5-dihydro-scillirosidin, 16β - hydroxy-5α-4,5-dihydro-scillirosidin, 16β -*O*-acetyl-5α -4,5- dihydro-scillirosidin, 12β-hydroxy-scillirubrosidin, 16β-*O*-acetyl-scillirubrosidin, 9-hydroxy-scilliphaeosidine, and 12β -hydroxy-desacetyl-scillirosidin (8).

Other constituents:

- Flavonoids (5) (vitexin, isovitexin, orientin, isoorientin, scoparin, vicenin-2, quercetin-3-monoglucoside, dihydroquercetin, dihydroquercetin-4'-monoglucoside), calcium oxalate (5,7,9), xanthoscillide (5), dihydro-benzofuran-type neolignan glucoside and free amino acids (L-azatidine-2-carboxilic acid was the predominant one) (7).

5. Medicinal uses

Well-established uses (4)

A. Expectorant.

Traditional medicinal uses (2,10)

B. Expectorant.

U. maritima **is a traditional medicinal plant for use in the specified indications exclusively based upon long-standing use.**

6. Herbal preparation correlated to medicinal use (11)

1. Infusion
2. Liquid extract (Alcoholic 70%)
3. Vinegar
4. Tincture

7. Posology and method of administration correlated to medicinal use (11)

Preparation 1: Dried bulb powder 60-200mg as infusion three times daily; with maximum daily dose of 500mg (4).

Preparation 2: Liquid Extract (12): 0.06-0.2 ml.

Preparation 3: Vinegar (12): 0.6-2.0 ml.

Preparation 4: Tincture (12): 0.3-2.0ml.

8. Contraindications

- Hypersensitivity to active substances and to other plants of the same family.

- The drug and pure glycosides, among others, should not be administered in the presence of second- or third-degree atrioventricular block, hypercalcemia, hypokalemia, hypertrophic cardiomyopathy, carotid sinus syndrome, ventricular

tachycardia, thoracic aortic aneurysm or Wolff-Parkinson-White (WPW) syndrome (13).

- It is not recommended for patients with impaired hepatic or renal function (11).

- It is not recommended for children under 12 years old (11).

- It is not recommended in stomach or bowel problems, as it can irritate the stomach and intestine (11).

9. 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.

- Squill contains cardiac glycosides with a narrow therapeutic range, thus therapeutic doses may induce side effects in susceptible individuals (14).

-Contact with the juice of the fresh bulb can lead to skin inflammation (squill dermatitis) (14).

- Monitoring of blood glucose level should be done regularly when used for diabetics as squill had been used in traditional medicine for diabetes (2).

- Squill is to be dispensed by prescription only (a prescription drug). It is considered to be potentially harmful if not used under medical supervision.

10. Interactions with other medicinal products and other forms of interaction (14-16)

- Digoxin
- Calcium supplements
- Medications for inflammation (Corticosteroids)
- Quinidine
- Stimulant laxatives
- Water pills (Diuretic drugs)

11. Fertility, pregnancy and lactation

- Squill must be avoided during pregnancy and lactation. It has been reported to be an abortifacient and to affect the menstrual cycle (11, 17).
- No fertility data available

12. Effects on ability to drive and use machines

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

13. Undesirable effects

- If adverse reactions occur, a doctor or a pharmacist should be consulted.
- These include gastric irritation or hypersensitivity reactions (urticaria/hives, flushing or dermatitis), salt and water retention, low potassium levels in blood and irregular pulse (14).

14. Overdose (13)

Overdosage can lead to cardiac rhythm disorders, life-threatening ventricular tachycardia, atrial tachycardia with atrioventricular block, stupor, vision disorders, depression, confusion, hallucinations and psychosis. Fatal dosages lead to cardiac arrest or asphyxiation.

15. Relevant biological activities

Anti-asthmatic activity

-A preliminary evaluation of the efficacy and safety of an add-on Squill Oxymel treatment in patients with moderate to severe persistent asthma was done. In a 6-week, triple-blind, randomized, placebo-controlled trial, 60 patients with stable moderate to severe persistent asthma were randomly allocated to receive either 10 ml syrup of Squill Oxymel, simple oxymel, or a placebo 2 times a day, as an add-on to their routine treatment (inhaled corticosteroids and β2 agonists). Spirometry and plethysmography were performed on patients to evaluate the effect of the treatment at baseline and end of intervention. The results showed significant improvement in spirometry parameters, especially FEV1 (1.54 ± .38 *vs.* 2.11 ± .49 l), in the Squill Oxymel group compared with the other groups. The increases in FEV1 liter, FEV1%, FEV1/FVC%, and MEF 25–75% during the intervention were significantly higher in the Squill Oxymel group than in the other groups (p < .001). However, the improvement of plethysmographic parameters showed no significant difference between the study groups (p>.05). The SGRQ scores (symptoms, activity, and total score) were significantly improved after intervention in both the Squill Oxymel and the simple honey oxymel groups (p < .001), but not in the placebo group. Nausea and vomiting was reported in 5 patients in Squill Oxymel and simple oxymel groups. No other serious adverse event was observed. The results of the study showed preliminary evidence for the efficacy and safety of the add-on treatment of Squill Oxymel in patients with moderate to severe persistent asthma (18).

Toxicity in human

-*U. maritima* led to death in 55 years-old woman who orally consumed two bulbs for arthritic pain. She was diagnosed with Hashimoto thyroiditis before ingestion of this plant and hypothyroidism may had associated with sever toxicity. Poisoning

symptoms were similar to digitals included vomiting, seizure, significant hyperkalemia, ventricular arrhythmias, atrioventricular block (19).

16. Additional information

U. maritima is the oldest drug used by human for cardiac problems (7). The glycosides present in the squill have digitalis like cardiotonic properties due to their aglycones. Action is faster but shorter-lasting than that of digitalis glycosides (20). Ingestion of squill is poisonous mainly due to its cardiac glycosides content (19).

17. Date of compilation/last revision

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