

***Urginea maritima* (L.) Baker**  
Liliaceae



Compiled by: Prof. F. M. Hammouda, Prof. S. I. Ismail,  
Dr. N. S. Abdel-Azim and Dr. K. A. Shams  
Edited by: Prof. K. H. Batanouny  
Photo by K. H. Batanouny

### ■ Morphological Description

Bulbous plant with rosetted leaves. Leaves appear at the beginning of winter. Leaves are basal, lanceolate to linear-lanceolate, 10-35 x 2-7 cm, glabrous, with smooth margin. Leaves become dry by the onset of summer and the plant becomes dormant for a period of 2-3 months depending on climate conditions as well as soil moisture content. In August, or one month later, flowers appear. The bulb is large, frequently white, or red, growing in clumps up to 70 together, each bulb more than 1 Kg. In florescence, a long scape reaching 60 cm to 1.5 m high with small flowers from the middle upwards. The red squill has longer and more stout scapes (1-1.5 m), whilst the white squill has shorter ones (60 cm). Fruits appear by the end of October, larger in red squills than in white squills. Seeds, 1-4 in each fruit, are minute, very light, compressed, oblong ca 3 x 7 mm and dark black-glossy coloured.

*U. maritima* is a polymorphic species with several varieties and forms. In Egypt there are three distinct morphological features collected from different localities. The specimens collected from Sidi Barrani along the Western Mediterranean coast, show two features regarding the colour and size of the bulb. The average diameter of the bulb of white squills is 8.5 cm, while it reaches 17 cm in the case of red squills. On the other hand, in the specimens

### *Urginea maritima* (L.)

Baker, J. Linn. London (Bot.) 13:221 (1873).

*Scilla maritima* L., *Squilla maritima* Steinh, *Urginea scilla* Steinh

### Names

**Arabic:** Basal Farion بصل فرعون, Onsul, Onsel Onsul, Onsel عنصل, Basal el-far بصل الفار, Buseil; Basul باصول – بصيل, Samm el-far سم الفار, Ishkil اشكيل

**Berber:** Ichkil, Isfil, Ikfilen, Lobsol bouchen, lbel idam

**English:** Medicinal Squill, Sea onion, Squill

**French:** Scilla maritime; Oignon marin, Scille

collected from the Eastern Mediterranean coastal zone between El-Arish and Rafah, the bulbs have intermediate diameter and their white tunics have a reddish tinge. Squills growing in Egypt show therefore distinctive features regarding the morphology of their bulbs: moderate size and a reddish tinge in the Eastern coastal region, the second with white tunics and smaller size, and the third with dark-red tunics and very large bulbs.

The flowers bloom in April and May and are followed by oblong capsules.

### ■ Geographical Distribution

**Local:** The plant is rare in the Mediterranean coastal region (Sidi Barrani Area) and the Isthmic Desert. In the latter region, it is found in maritime sands as well as in stony grounds and ascending hills.

**Regional:** All North African countries.

**Global:** Mediterranean region and the Canary Islands.

### ■ Ecology

The plant is found in in most of the Mediterranean districts in dry, sandy places especially at the coast. White and red squills are said to grow on soils with different physical and chemical properties. Soils supporting the white squill are shallower, more compact, with higher content of carbonates and soluble salts than those supporting the red squill. The soils supporting the red squill are of sandstone origin, while those supporting the white squill are

of limestone origin.

The total plant cover of the community dominated by the white squill is about 60%; almost half of it is occupied by the squill. In the case of the red squill, the total plant cover is 68 %, and the squill occupies about 90% of this cover.

The number of bulbs in 100 m<sup>2</sup> was found to be 430 for white squills and 250 for red squills, while the weight of these bulbs was 70 Kg for white squills and 123 Kg for red squills.

### ■ Status

Recently, the plant has been subject to severe uprooting and collection for pharmaceutical companies. It is now rare compared with its status thirty years ago. A study by Batanouny et al. (1970), showed that an approximately equal number of bulbs would grow three years after collection.

However, the weight of the new bulbs would be 13.7 Kg compared to the 70 Kg from a natural unharvested area. This confirms that the reestablishment of the squill will take many years even in the case of protecting the habitat after collection.

Conservation and cultivation of this plant for further use by pharmaceutical companies is essential. It is a very endangered species. The plant, being inedible, does not need enclosure for cultivation. Reseeding of the plant would be in the areas from which the bulbs were collected.

**Part(s) Used:** The medicinal parts come from the bulbs of the white variety collected after flowering and the fresh, fleshy bulb scales of the white red varieties.

**Collection:** bulbs are harvested after six years of cultivation in late autumn, or from the wild, sliced transversely and dried for use.

**Preparation:** infusion, liquid extracts, squill vinegar, tincture.

**Use:** oral and externally.

### ■ Constituents

White squill contains, as active constituents, several steroid glycosides (bufadienolides), including scillaren A (scillarenin + rhamnose + glucose), glucoscillaren A (scillaren A + glucose), proscillaridin A (scillarenin + rhamnose), scillaridin A, scillicyanoxide, scilliglucoside, scilliphaeoside (12 B-hydroxyproscillaridin A), and glucoscilliphaeoside (12 B-hydroxyscillaren), the most important being

scillaren A and proscillaridin A. Scillaren B has been used to describe a mixture of squill glycosides as opposed to pure scillaren A.

Other constituents present in white squill include flavonoides (vitexin, isovitexin, orientin, isoorientin, scoparin, vicenin-2, quercetin, dihydroquercetin or taxifolin, dihydroquercetin-4-monoglucoside.), stigmasterol, scilliglucosidin, and mucilage (glucogalactans).

Red squills contain scilliroside; and also cardiac glycosides, as white squills.

### ■ Pharmacological Action and Toxicity

The glycosides present in the squill have digitalis-like cardiotonic properties which are due to their aglycones. Action is faster but shorter-lasting than that of digitalis glycosides.

Squill has a stimulating action on the heart which makes it useful for heart failure and fluid retention caused by heart problems. It has been used in cases where Digitalis would be considered dangerous. In medicinal doses it acts upon the circulation like Digitalis, slowing and strengthening the cardiac contractions, making the pulse slower and stronger, raising arterial tension, and increasing the flow of urine.

The action of the drug is that of a cardiac stimulant, with three important further properties all dependent on its irritant constituents. In small doses, that would not affect the heart, it is a gastro-intestinal, a bronchial and renal irritant. The two later properties make it a powerful expectorant and a fairly active diuretic.

The difference between its actions as an expectorant and a cardiac stimulant would seem to indicate its possession of two or more active principles, one specifically affecting the secretory mucous membranes, and the other the circulatory apparatus. Squill may be combined with Marrabium and Tussilago in bronchitis, with Ipecacuanha in whooping cough.

Squill is considered an abortifaciant and may lead to SAB if used during pregnancy. Its use is not recommended.

It is given in pill form, made from the powdered root beaten into a mass, with the addition of syrup or mucilage of gum arabic.

In case of overdose the plant is an irritant poison,

causing nausea and vomiting, purging, gastroenteritis, straugury, bloody urine, perhaps suppression, convulsions, and death by paralysis of the heart in systole.

The root is bitter to the taste and so acrid that it will blister the skin if it is handled too much. Combined with a sedative, such as opium, it has been given to treat chronic bronchitis, though not for acute bronchitis, which would be aggravated; nor in phthisis, which is invariably accompanied by a hypersensitive state of the alimentary tract. For similar reasons squill should not be given in any form of Bright's disease. The text book prohibition against its use in acute Bright's disease should certainly be extended to chronic nephritis in all its forms.

### ■ Pharmacopoeias

Egyptian pharmacopoeia, 1984.

British pharmacopoeia, 1988.

### ■ Pharmaceutical Products

Scillaren (Sandoz)

Palmocadil syrup (Nile)

Cosylan syrup (Park Davis)

Lobestra syrup (Nile)

Expectyl syrup (Adco)

Broncho cough syrup (Mepaco)

### ■ Traditional Medicine and Indigenous Knowledge

**History:** White squill bulbs are applied fresh for the treatment of wound and tumours, and also to heal neurological pains, skin problems and eye afflictions. Infusion of dried bulb has been used as a strong purgative.

The fresh bulb is used for rheumatic pain, oedema, gout and also anthelmintic.

The squill was valued as a medicine in early classical times and has ever since been employed by physicians, being official in all pharmacopoeias.

Oxymel of Squill, used for coughs, was invented by Pythagoras, who lived in the sixth century B.C.

It is mentioned by Theophrastus in the third century B.C., and was known to all the ancient Greek physicians. Epimenides, a Greek, is said to have made much use of it, from which we find it called Epimenidea.

It is considered to be the Sea Onion referred to by

Homer. Pliny was acquainted with it, and Dioscorides, from the same period, described the different varieties of the bulb and how to make vinegar. A similar preparation, as well as compounds of squill with honey, was administered by the Arabian physicians of the Middle Ages, who introduced the drug into European medicine, these preparations still remaining in use.

**Records from countries of the region:** in Libya as a territory marker.

### ■ Traditional Medicinal Uses

- Cancer.
- Chest diseases (bronchial asthma, bronchial catarrh, bronchopneumonia, allergic cough, acute and chronic bronchitis)
- Constipation
- Diabetes
- Heart diseases (heart failure and fluid retention caused by heart problems, cardiotoxic).
- Neurological diseases
- Renal diseases (chronic nephritis, promotion of urine)
- Skin diseases (wounds, oedema, and dermal fungus infection)
- Rheumatic diseases

**Other uses of the plant:** It is planted in the vicinity of Arab graves, to protect them, according to tradition. The Bedouins believe that whenever there is an abundance of *Urginea maritima* flowers, there will be a rainy winter.

In the Eastern Mediterranean zone of Egypt (El-Arish, Rafah zone), the plant was used as a territory marker between the barley fields. This practice was also recorded in Libya.

The Bedouins use it mainly as a rodenticide.

Squill is a household word in many countries, especially in England, where it is freely used in domestic practice for the coughs of infants and children. It is chiefly employed as an expectorant and diuretic, through it renders excellent service as a cardiac stimulant, and hair tonic.

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