

- 6.1.18. *Allium roseum* L., Sp. Pl., ed. 1, 296 (1753) var. *tourneauxii* Boiss., Fl. Orient. 5: 274 (1882); Boulos, Fl. Egypt 4: 67 (2005).

### Constituents

The proximate composition of *Allium roseum* edible part, collected from Tunisia is; soluble carbohydrates,  $32.80 \pm 0.21$ ; protein,  $22.70 \pm 1.51$ ; fibers,  $12.30 \pm 0.05$ ; ash,  $7.21 \pm 1.31$ ; and fat,  $3.60 \pm 0.29\%$  (Najjaa *et al.*, 2012).

The fatty acids of the leaves are myristic ( $0.78 \pm 0.11$ ), myristoleic ( $0.12 \pm 0.08$ ), palmitic ( $12.82 \pm 0.33$ ), palmitoleic ( $0.5 \pm 0.18$ ), margaric ( $C_{17:0}$ ) ( $0.16 \pm 0.13$ ), heptadecanoic ( $0.15 \pm 0.12$ ), stearic ( $0.89 \pm 0.23$ ), oleic ( $2.87 \pm 0.70$ ), linoleic ( $25.68 \pm 0.44$ ), linolenic ( $52.68 \pm 0.41$ ), arachidic ( $0.19 \pm 0.17$ ) and gadoleic ( $C_{20:1}$ ) ( $2.55 \pm 0.32\%$ ) acids (Najjaa *et al.*, 2012).

*Allium roseum* contains steroidal saponins of 25L series (Laorga and Pinar, 1960). TLC analysis revealed that *Allium roseum* contains diallyl sulphide (Muoio *et al.*, 2004). The analysis of essential oils of flowers (0.012%) and stems (0.002%) of *Allium roseum*, growing in Tunisia, revealed some significant differences. The sulphur compounds representing 60.97% of the total constituents have been identified in the flower oil. The main components found in this origin were allyl methyl disulphide (16.06%) and diallyl disulphide (16.57%). Six sulphur compounds representing 11.2% of all the components of the stem volatile fraction were characterized. The latter was rich in fatty acid esters, they represent 65.23% of all its components. Flower oil was richer in sulphur compounds than stem oil and the two main sulphur compounds allyl methyl disulphide and diallyl disulphide in the flower oil did not exist in significant amounts in stem oil (Hichem *et al.*, 2007). Methiin, alliin and isoalliin were also detected in the plant (Najjaa *et al.*, 2011a).

The sulphur compounds of the essential oil from the flowers of *Allium roseum* var. *odoratissimum* are 2,4-dimethylthiophene, 2-propenyl Me disulfide, 1-propenyl Me disulfide, di-Me trisulfide and methional. The latter compound amounts to 17% (Najjaa *et al.*, 2007). Later, Zouari *et al.* (2012) reported that *Allium roseum* var. *odoratissimum* flower essential oil contains organo-sulphurous compounds (46%), including Me 2-propenyl trisulfide, di-2-propenyl trisulfide, di-1-propenyl disulfide, di-2-propenyl disulfide, di-Me trisulfide, Me 2-propenyl disulfide, and di-1-propenyl trisulfide, found as 10.75, 9.07, 5.81, 4.98, 3.90, 3.30, and 2.53%, respectively.

Total polyphenolic contents (TPGs) of the flower and leaf of *Allium roseum* were found significantly higher than that of bulb reaching  $736.65 \pm 88.67$  and  $749.54 \pm 129.15$  mg catechol equivalent/100 g of dry material (Najjaa *et al.*, 2011b).

Investigation of the total proteinic extracts of the different organs (flowers, bulbs, leaves and seeds) of *Allium roseum*, growing in Tunisia, revealed that leaves had the highest protein content and the seeds had the highest diversified molecular weight varying from 10 to 50 kDa comparatively to other organs (Najjaa *et al.*, 2009).

Kaempferol 3,7-di-*O*-rhamnoside, kaempferol 3-glucuronide, kaempferol 3-*O*-glucoside, kaempferol 3-*O*- $\beta$ -glucoside-7-*O*- $\alpha$ -rhamnoside, luteolin and apigenin were identified from *Allium roseum* var. *odoratissimum* (Dziri *et al.*, 2012).