7.5. ***DIGERA*** Forssk.

The genus *Digera* is represted in Egypt by one species (Boulos, 1999).

7.5.1. ***Digera muricata*** (L.) Mart., Nov. Act. Nat. Cur. 13: 285 (1826); Boulos, Fl. Egypt 1: 136 (1999).
Syns. *Achyranthes muricata* L., Sp. Pl., ed. 2, 295 (1762);
Digera arvensis Forssk., Fl. Aegypt.-Arab. 65 (1775).

Constituents

The phytochemical screening of *Digera muricata* revealed the presence of phenols, flavonoids, alkaloids, terpenes, sterols, tannins, glycosides and lignin The quantitative estimation of the different constituents are: proteins (8.305 ± 1.13), carbohydrates (20.90 ± 3.33), chlorophylls (8.040 ± 2.17), amino acids (2.382 ± 0.19), reducing sugars (0.4.040 ± 1.37), lipids (2.800 ± 0.48), prolines (1.090 ± 0.57), phenols (0.414 ± 0.19), flavonoids (0.214 ± 0.13), alkaloids (0.013 ± 0.15), terpenoids (1.270 ± 1.03), saponins (0.857 ± 0.89) and tannins (1.412 ± 0.73) mg/100 g (Mathad and Mety, 2010). According to Sharma *et al*. (2011b), the plant contains higher soluble sugars in roots, starch, protein and lipids in leaves and phenol in roots as compared to other parts of the plant (Table 63).

Table 63. Proximate composition of the different parts of *Digera muricata**
(mg/g dry weight)

Plant parts	Soluble sugar	Starch	Lipid	Protein
Root	32.3±0.43	27.1±0.69	9.2±1.41	44.0±0.69
Stem	16.5±1.71	18.8±1.14	2.6±1.14	19.5±1.01
Leaf	28.7±1.41	33.5±1.41	18.3±0.71	78.0±1.01

* (Sharma *et al.*, 2011b)

Digera arvensis is quite rich in protein, Fe, P, carotenoids and ascorbic acid, but moderate in Ca and oxalic acid contents (Ragu and Kapoor, 1997). The potential profile of *Digera arvensis* and its potential for meeting the nutritional seeds of the Indian populations have been reviewed (Seshadri and Nambiar, 2003).

Calcium content of *Digera arvensis* amounts to 506 mg/100 g (Gupta *et al*., 2005). The bioavailability of Fe and/or Ca in Digera species has been reported (Reddy and Kulkarni, 1986; Gupta *et al*., 2006; Vijaya *et al*., 2008). Analysis of nutrient (carbohydrates, proteins, minerals, total carotenoids, β-carotene, lutein and ascorbic acid) and antinutrient (oxalate content and tannins) constituents of *Digera arvenis* and/or *Digera muricata*, have been reported by several authors (e.g. Rao *et al*., 1980; Nambiar and Seshadri, 1998; Bharathi and Umamaheshwari, 2001; Rajyalakshmi *et al*., 2001; Punia *et al*., 2004; Gupta *et al*., 2005; Bélanger *et al*., 2010).

The leaves of *Digera muricatus*, growing in India, contained 3.00% lipids, which were separated into neutral lipid (0.8%) and phospholipids (2.04%). The following fatty acids were identyified in the lipids: capric , 4.94; lauric, 3.71; myristic, 1.60; palmitic, 78.6; stearic, 2.01; and oleic, 2.72% (Khan and Khan, 1989).

The major components of the essential oils of leaves and roots of *Digera arvensis* were found to be α-phellandrene (52.04%); longifolene (15.12%) and α-cedrene (14.67%) from stems; and longifolene (125.12%), α-cedrene (16.67%) and α-phellandrene (58.21%) from roots, respectively (Sarada and Rao, 2006).

Both α- and β-spinasterols were identified in *Digera arvensis* (Dogra *et al*., 1977). Luteolin and mannitol were isolated from the plant (Mehta *et al*., 1981).