Egyptian Herbal Monograph

Volume 3

Medicinal plants used in Egypt

Egyptian Drug Authority (EDA)

2024

Egyptian Herbal Monograph

Medicinal Plants Used in Egypt

***Beta vulgaris* L.** **بنجر**

1. Names & Synonyms (1)

***Beta vulgaris* L.**

Family: Amaranthaceae.

Arabic: Bangar بنجر, Shamandar شمندر (2).

English: Beet, Beetroot, Common beet, Garden beet (2).

2. Parts used for medicinal purpose

- Roots (3,4).

3. Major chemical constituents

- **Betalains**: Betacyanins (betanin, betanidin) and betaxanthins (vulgaxanthin I, II, indicaxanthin) (5,6).
- **Phenolic compounds**: Phenolic acids (gallic, caffeic, syringic, ferulic, *p*-coumaric, chlorogenic, *p*-hydroxybenzoic and vanillic acids), flavonoids (quercetin, myricetin, (7,8) astragalin, tiliroside, rhamnocitrin, kaempferol and rhamnetin (9)).
- **Organic acids**: Citric, ascorbic, malic, fumaric, phosphoric and shikimic acids (6).
- **Saponins**: Betavulgarosides I-VI (10).
- **Carbohydrates**: Sugars (sucrose, glucose and fructose), pectin (7, 11).
- **Others**: Salts (nitrates, chlorides and sulfates) (8), carotenoids, sesquiterpenoids, coumarins (9), minerals (sodium, potassium, calcium, zinc) and vitamins C & B complex (12,13).

4. Medicinal uses (Indications)

Supportive therapy in diseases of the liver and fatty liver (3,4, 14,15).

5. Herbal preparations correlated to medicinal use

1) Powdered roots (3,4).
2) Dry extract (aqueous or hydroethanolic).

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

- 10 g powdered root or equivalent preparations after meals for 14 days, reducing to 5 g/day for 3 months (3,4).

Method of administration: Oral use.

7. Contraindications (16)

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

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.
- Beet can make urine or stools appear pink or red. But this is not harmful (16).

9. Interactions with other medicinal products and other forms of interaction

- None reported (16).

10. Fertility, pregnancy and lactation (16,17)

- Safety during pregnancy and lactation has not been established. In the absence of sufficient data, the use during pregnancy and lactation is not recommended.

- 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

- None known (15).

13. Overdose

- Overdoses might cause hypocalcemia, kidney damage, and oxalate-toxicity (3,4) of the drug's oxaluric acid content (2).

14. Relevant biological activities

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

15. Additional Information

--

16. Date of compilation/last revision

28/12/2023

References

1.	https://powo.science.kew.org.
2.	Lim, T. K. (2016). Edible Medicinal and Non-Medicinal Plants. Springer, ISBN 978-94-017-7275-4.
3.	Duke, J. A. (2002). Handbook of Medicinal Herbs. 2nd ed. CRC Press. ISBN 978084931284.
4.	PDR for Herbal Medicines (2002). Montvale, NJ: Medical Economics Company, 2nd ed., ISBN 1- 56363-361-2.
5.	Belhadj Slimen, I., Najar, T. and Abderrabba, M. (2017). Chemical and antioxidant properties of betalains. *J. Agric. Food Chem.*, **65**(4), 675-689. doi: 10.1021/acs.jafc.6b04208.
6.	Baião, D. D. S., Silva, D. V. T. D. and Paschoalin, V. M. F. (2020). Beetroot, a remarkable vegetable: Its nitrate and phytochemical contents can be adjusted in novel formulations to benefit health and support cardiovascular disease therapies. *Antioxidants* (Basel), **9**(10), 960. doi: 10.3390/antiox9100960.
7.	Baião, D., Silva, D., Mere Del Aguila, E. and Paschoalin, V. (2017). Nutritional, bioactive and physicochemical characteristics of different beetroot formulations. In Food Additives. InTech. doi: 10.5772/65204. Edited by: Karunaratne, D. N. and Pamunuwa, G.
8.	Wruss, J., Waldenberger, G., Huemer, S., Uygun, P., Lanzerstorfer, P., Müller, U., Höglinger, O. and Weghuber, J. (2015). Compositional characteristics of commercial beetroot products and beetroot juice prepared from seven beetroot varieties grown in Upper Austria. *Journal of Food Composition and Analysis*, 42, 46 - 55.
9.	Punia Bangar, S., Sharma, N., Sanwal, N., Lorenzo, J. M. and Sahu, J. K. (2022). Bioactive potential of beetroot (*Beta vulgaris*). *Food Res. Int*, 158, 111556. doi: 10.1016/j.foodres.2022.111556.
10.	Yoshikawa, M., Murakami, T., Kadoya, M., Matsuda, H., Muraoka, O., Yamahara, J. and Murakami, N. (1996). Medicinal foodstuff. III. Sugar beet. (1): Hypoglycemic oleanolic acid oligoglycosides, betavulgarosides I, II, III, and IV, from the root of *Beta vulgaris* L. (Chenopodiaceae). *Chem. Pharm. Bull.* (Tokyo), **44**(6), 1212-7. doi: 10.1248/cpb.44.1212.
11.	Mirmiran, P., Houshialsadat, Z., Gaeini, Z., Bahadoran, Z. and Azizi, F. (2020). Functional properties of beetroot (*Beta vulgaris*) in management of cardio-metabolic diseases. *Nutr. Metab.*, 17, 3. doi: 10.1186/s12986-019-0421-0. PMID: 31921325; PMCID: PMC6947971.
12.	Kale, R. G., Sawate, A. R., Kshirsagar, R. B., Patil, B. M. and Mane, R. P. (2018). Studies on evaluation of physical and chemical composition of beetroot (*Beta vulgaris* L.). *International Journal of Chemical Studies*, 6, 2977-2979.
13.	Ceclu, L. and Oana-Viorela, N. (2020) Red Beetroot: Composition and health effects - A review. *J. Nutri. Med. Diet Care*, 6: 043. doi.org/10.23937/2572-3278.1510043.
14.	Chevallier, A. (1996). The Encyclopedia of Medicinal Plants, Dorling Kindersley, London, UK.
15.	https://www.rxlist.com/supplements/beet.htm

16.	https://www.webmd.com/vitamins/ai/ingredientmono-306/beet
17.	www.drugs.com