

# **Egyptian Herbal Monograph**

**Volume 1**

**Wild Medicinal Plants**

**Egyptian Drug Authority (EDA)**

**2025**



# Egyptian Herbal Monograph

## Wild Medicinal Plants

***Plantago afra* L.**

قبطونة

### 1. Names & Synonyms (1-3)

***Plantago afra* L.**

**Family:** Plantaginaceae.

**Syns.:** *Plantago psyllium* L.

*Plantago parviflora* Desf.

**Arabic:** Qatoota قاطونة, Hab El-baragheet حب البراغيث

Seeds are known as Bizr qatoota بذر قاطونة.

**English:** Flea-wort.

### 2. Geographical distribution (1-3)

Desert east of the Nile including that of Sinai as well as the Red Sea and Gebel Elba.

### 3. Parts used for medicinal purposes (1-3)

Ripe seeds.

### 4. Major chemical constituents

- **Polysaccharides:** Mucilage (4) mainly composed of arabinoxylan (hemicellulose) (5).
- **Phenylpropanoid glycosides:**  
Acetoside (Verbascoside) and isoacetoside (isoverbascoside) (seeds) (6).
- **Fatty acids:**  
Tritriacontanoic acid (synonyms: psyllic acid, ceromelissic acid) (husk) (7, 8).
- **Iridoids:** aucubin (seeds) (9).

## 5. Medicinal uses

### Well-established

- A. Emollient, demulcent (10) and in chronic constipation (10, 11).
- B. Bulk-forming laxative to provide gentle relief of constipation (for the treatment of habitual constipation) (12).
- C. In conditions where easy defecation with soft stool is desirable, *e.g.* in cases of painful defecation after rectal or anal surgery, fissures and haemorrhoids, following rectal examinations and pregnancy (9, 12, 13, 15).
- D. In conditions which need an increased daily intake of fiber, *e.g.* irritable bowel syndrome (12, 16).

### Traditional use (2, 17)

- E. Emollient.
- F. Bulk forming laxative for chronic constipation.

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

## 6. Herbal preparations correlated to medicinal use (2)

- 1. Seeds.
- 2. Decoction of seeds.

## 7. Posology and method of administration correlated to medicinal use

**Adults and children over 12 years of age:** as laxative, 4-16g orally (11), 1-3 times daily depending of the individual response (13).

**Children 6-12 years:** as laxative, half of the adult dose (9).

### Duration of use

Continued use for 2 to 3 days is needed for maximum laxative benefit (13).

**Method of administration:** Oral use.

A sufficient amount of liquid (water, milk, fruit juice or similar aqueous liquid) should always be taken *e.g.* 30 ml of water per 1 g of herbal substance (12). The medicinal product can be mixed with the liquid and then swallowed as quickly as possible after stirring briskly, and then adequate fluid intake has to be maintained (9). The effect starts 12 - 24 hours later (12).

## 8. Contraindications

- Hypersensitivity to active substances or to other plants of the same family.
- Patients who have difficulty in swallowing or any throat problems (9, 11, 14, 18).
- Patients suffering from abnormal constrictions (12, 19) or inflammatory illness in the gastro-intestinal tract (19).
- In case of intestinal obstruction, potential or existing intestinal blockage (ileus) (12, 13, 19, 20).
- Patients with diseases of the esophagus and cardia (12).
- Paralysis of the intestine or megacolon (12).
- Patients experiencing a sudden change in bowel habits that has persisted for more than 2 weeks (9, 12).
- Patients with fecal impaction (12).
- Patients with undiagnosed rectal bleeding, or failure to defaecate following the use of another laxative product (9, 12, 13, 21).
- Diabetic patients who have difficulty managing their blood sugar level (9, 12, 13, 14, 17, 18, 19, 21).

## 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.
- It should always be taken with sufficient fluid *e.g.* 30 ml of water per 1 g of herbal substance (12), as there is a risk of intestinal or esophageal obstruction and fecal impaction, especially if it is swallowed dry (12, 13, 19, 22).
- When taken with inadequate fluid amounts, bulk forming agents can cause obstruction of the throat and esophagus with choking and intestinal obstruction. Symptoms can be chest pain, vomiting, or difficulty in swallowing or breathing (12).
- It should not be taken immediately before going to bed (22).
- In patients who are confined to bed, do little physical exercise, debilitated patients or elderly patients, a medical examination may be necessary prior to treatment with the drug (12, 13).
- It should be taken at least half an hour after other medications to prevent delayed absorption of the latter (13).
- If taken with medicinal products known to inhibit peristaltic movement (*e.g.* opioids) a medical supervision is necessary in order to decrease the risk of gastrointestinal obstruction (ileus) (12).
- Treatment should be stopped and medical advice sought, in case of bleeding, or if no response occurs after ingesting the drug, or in cases of any irregularity of feces,

(12, 13, 23); symptoms such as abdominal pain, nausea and vomiting can be signs of potential or existing intestinal blockage (ileus) (12).

- It is not recommended to be used for children under 6 years of age due to insufficient data on efficacy (12).
- Laxative bulk producers should be used before using other purgatives if change of nutrition is not successful (12).
- In patients with diabetes taking oral agents or insulin to achieve glycemic control, blood glucose levels should be monitored more closely when initiating or adjusting doses of the latter can lower blood glucose level and impair carbohydrate absorption (24).
- In the case of insulin dependent diabetics, if the product is taken together with meals, it may be necessary to reduce the insulin dose (25, 26).
- Bulking agents have been reported to diminish the absorption of concomitantly some administered medicines (13).
- Psyllium seed should be used concomitantly with thyroid hormones only under medical supervision. The dose of the thyroid hormones may have to be adjusted (12).

#### **Warning on hypersensitive reactions concerning powder formulations:**

- Allergic sensitization may occur due to inhalation of the airborne dust upon using the powder of Psyllium seeds or in individuals with continued occupational contact to powder (*i.e.* healthcare workers, caregivers). This sensitization usually leads to hypersensitivity reactions which could be serious (12). To minimize the potential allergic reaction, users should spoon the product from the container directly into a drinking glass and then add liquid (23) and the health professionals who frequently dispense powdered should avoid inhaling airborne dust while handling these products (13). It is recommended to assess clinically the possible sensitization of individuals at risk. In case of proven sensitization leading to hypersensitivity reactions, exposure to the product should be stopped immediately and avoided in the future (12).

### **10. Interactions with other medicinal products and other forms of interaction**

- **Oral medicinal products** (9, 12, 13, 20, 24, 25, 28-30): Enteral absorption of concomitantly administered medicines may be delayed such as:
  - Minerals (*e.g.* calcium, magnesium, copper and zinc)
  - Vitamins (B 12)
  - Cardiac agents (beta-blockers, calcium channel blockers and cardiac glycosides)

- Coumarin derivatives
- Lithium salts
- Carbamazepine
- **Antidiabetic agents:** If the product is taken together with meals in the case of insulin dependent diabetics it may be necessary to reduce the insulin dose (9, 12, 13, 20, 25, 26).
- **Thyroid hormones:** It should be used concomitantly with thyroid hormones only under medical supervision because the dose of the thyroid hormones may have to be adjusted (9, 12).
- **Peristaltic movement inhibitor agents:** In order to decrease the risk of gastrointestinal obstruction (ileus), it should only be used under medical supervision together with medicinal products known to inhibit the peristaltic movement (*e.g.* Morphinomimetics and Loperamide) (9, 12).
- **Sodium picosulfate:** Mild interactions (31).
- **Food:** It may decrease nutrient absorption (20).
- **Lab Test:** Psyllium may decrease blood glucose testing (theoretical), may decrease total cholesterol, LDL, HDL ratio test results and may cause a false increase in serum digoxin (20).

## 11. Fertility, pregnancy and lactation

- It can be used during pregnancy and lactation (9, 32). A risk is not to be expected since the constituents of Psyllium seed are not absorbed and have no systemic effects (9).
- No fertility data available (13).

## 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.
- Hypersensitivity reactions such as rhinitis, conjunctivitis, bronchospasm and in some cases, anaphylaxis; cutaneous symptoms such as exanthema and/or pruritus have also been reported (9, 12- 14, 18, 19, 33-35).
- Flatulence may occur with the use of the product (9, 12, 13, 18, 20, 26). These side-effects may be reduced by gradually increasing fiber intake, starting at one dose per day and gradually increasing to three doses per day and may be reduced by

decreasing the amount of Psyllium taken for a few days (13, 26) with generally disappears in the course of the treatment (9, 12).

- Abdominal distension and risk of intestinal or esophageal obstruction and fecal impaction may occur, particularly if swallowed with insufficient fluid. The frequency is not known (9, 12, 20).
- Nausea, vomiting, anorexia, diarrhea (20).

## 14. Overdose

Overdose may cause abdominal discomfort and flatulence, or even intestinal obstruction. Adequate fluid intake should be maintained, and management should be symptomatic (9, 12).

## 15. Relevant biological activities

### Laxative effect

-A preparation made from "*Plantago psyllium*" was administered (3 times 3.4 g daily) to 63 patients suffering from chronic functional constipation for a period of 20 days. The tolerance of the preparation was satisfactory in 55 patients (87%), including 49 (89%), who reported a favorable effect, i.e. problem-free defecation and regression or disappearance of meteorism. A statistically significant decline of serum cholesterol occurred. In 14 patients (25%) a weight loss of more than 1 kg was observed. The results concluded that the preparation can be considered suitable for the treatment and probably also the prevention of chronic functional constipation and as an adjuvant in the treatment of hyperlipoproteinaemia type II, in particular when associated with obesity (36).

-The therapeutic value of "Psyllium" for the treatment of constipation among others was discussed: "There is a scientific basis for Psyllium working as a mild laxative. This evidence, combined with the available research in humans, suggests that Psyllium decreases the time necessary to pass bowel movements, increases the number of bowel movements per day and increases the amount of stool passes (37).

-Psyllium has been shown to have the paradoxical property of both improving constipation by increasing stool weight (38) and ameliorating chronic diarrhea (39).

-The hypothesis that a gel-forming fraction of Psyllium escapes microbial fermentation and is responsible for the characteristics that enhance laxation were tested. Fifteen healthy adults consumed controlled diets for two 7-d periods, one of which included 8.8 g dietary fiber provided by 15 g/d of a Psyllium seed husk preparation. All stools were collected and evaluated and diet was monitored throughout. Psyllium significantly increased the apparent viscosity of an aqueous stool extract, stool moisture, and wet and dry stool weights. A very viscous fraction, not present in low-

fiber stool and containing predominantly 2 sugars: xylose (64%) and arabinose (27%), the same two sugars that account for the majority (79%) of the carbohydrate in Psyllium. The results concluded that in contrast with other viscous fibers that are fermented completely in the colon, a component of Psyllium is not fermented. This gel provided lubrication that facilitated propulsion of colon contents and produced a stool that was bulkier and moister than were stools resulting with use of comparable amounts of other bowel-regulating fiber sources (40).

-Psyllium has been reported to increase stool frequency, weight and decrease stool consistency in constipated patients. These effects are not associated with significant changes in colorectal motility. The clinical parameters were not significantly affected by treatment with Psyllium although there was a significant decrease in transit time (41-45).

## **16. Additional information**

It has lipid- and glucose-lowering effects (46-50).

## **17. Date of compilation/last revision**

15/9/2023.



## References

1	Boulos, L. (2000). Flora of Egypt, Al Hadara Publishing, Cairo, Egypt.
2	Batanouny, K. H. (1999). Wild Medicinal Plants in Egypt. (with contribution: Aboutabl, E., Shabana, M. and Soliman, F.). Academy of Scientific Research and Technology, Egypt. The World Conservation Union (IUCN).
3	Hassan, N. M and Abdallah, W. E. (2020). <i>Plantago afra</i> L. In: Egyptian Encyclopedia of Wild Medicinal Plants, <b>9</b> , 112-121. Academy of Scientific Research and Technology, Cairo, Egypt.
4	<a href="https://arzneipflanzenlexikon.info/en/medicinal-plants/psyllium-plantain.php">https://arzneipflanzenlexikon.info/en/medicinal-plants/psyllium-plantain.php</a> .
5	Kumar, D., Pandey, J., Kumar, P. and Raj, V. (2017). <i>Psyllium</i> mucilage and its use in pharmaceutical field: An overview. <i>Curr. Synthetic Sys. Biol.</i> , <b>5</b> , 134.
6	Li, L., Rong, T., Zhiqiang, L., Shuying, L., Raymond, Y., Christopher, J. Y., Honghui, Z., Zeyuan, D., Mingyong, X. and Zhihong, F. (2005). Isolation and purification of acteoside and isoacteoside from <i>Plantago psyllium</i> L. by high-speed counter-current chromatography. <i>Journal of Chromatography A</i> , <b>1063</b> , 161-169.
7	<a href="https://pubchem.ncbi.nlm.nih.gov/compound/Tritriacontanoic-acid">https://pubchem.ncbi.nlm.nih.gov/compound/Tritriacontanoic-acid</a> .
8	Kawashty, S. A., Gamal-El-Din, E., Abdalla, M. F. and Saleh, N. A. M. (1994). Flavonoids of <i>Plantago</i> species in Egypt. <i>Biochemical Systematics and Ecology</i> , <b>7</b> (22), 729-733.
9	ESCOP Monographs (2017). <i>Psyllii Semen - Psyllium Seed</i> . European Scientific Cooperative on Phytotherapy. Simon Mills and Roberta Hutchins, editors. Thieme, Stuttgart. Online series, IBN 978-1-901964-48-6.
10	Egyptian Pharmacopoeia (2005). 4 <sup>th</sup> edition. General Organization for Government Printing. Cairo.
11	Egyptian Pharmacopoeia (1984). 3 <sup>rd</sup> edition. General Organization for Government Printing. Cairo.
12	Community Herbal Monograph on <i>Plantago afra</i> L. et <i>Plantago indica</i> L., semen (2013). EMA/HMPC/599747/2012. Committee on Herbal Medicinal Products (HMPC).
13	WHO Monographs on Selected Medicinal Plants (1999). Monographs on Selected Medicinal Plants, <b>1</b> , 202-212.
14	Blumenthal, M., Goldberg, A. and Brinkmann, J. (2000). Herbal Medicine: Expanded Commission E Monographs. <i>Psyllium Seed</i> , Black. Boston (MA): Integrative Medicine Communications.
15	Food and Drug Administration (2007). Rules and Regulations Federal Register, <b>60</b> (27), 14669-14674.
16	Ford, A. C., Moayyedi, P., Chey, W. D., Harris, L. A., Lacy, B. E., Saito, Y. A. and Quigley, E. M. M. (2018). ACG Task force on the management of functional bowel disorders. American College of Gastroenterology monograph on the management of irritable bowel syndrome and chronic idiopathic constipation. <i>Am. J. Gastroenterol.</i> , <b>118</b> (suppl 2): 1-18. doi: 10.1038/s41395-018-0084-x.
17	Conservation and sustainable use of medicinal plants in Egypt, National Surveys (2016). UNDP, GEF, ASRT and NRC, Volumes <b>1-5</b> .

18	Bradley, P. R. (1992). British Herbal Compendium: A Handbook of Scientific Information on Widely Used Plant Drugs, volume 1. Bournemouth (UK): British Herbal Medicine Association.
19	PDR for Herbal Medicines (1998). Medical Economic Co. Montvale, New Jersey, 639. ISBN 1563633612, 9781563633614.
20	Skidmore-Roth (2010). Mosby's Handbook of Herbs and Natural Supplements. St. Louis: Mosby, 4 <sup>th</sup> ed. ISBN: 978-0-323-05741-7.
21	Bradley, P.R., ed. (1983). British herbal compendium, volume 1. Bournemouth, British Herbal Medicine Association, 199–203.
22	Martindale: The Complete Drug Reference (2007). Pharmaceutical Press. Electronic version, London.
23	Physicians' Desk Reference. (1991). 45 <sup>th</sup> ed. Montvale, NJ, Medical Economics Company, 1740–1741.
24	<a href="https://www.drugs.com/npp/capers.html">https://www.drugs.com/npp/capers.html</a> .
25	Cummings, J. H. (1978). Nutritional implications of dietary fiber. <i>Am. J. Clin. Nutr.</i> , <b>31</b> , S21-9.
26	Kay, R. M. and Strasberg, S. M. (1978). Origin, chemistry, physiological effects and clinical importance of dietary fiber. <i>Clin. Invest. Med.</i> , <b>1</b> , 9-24.
27	Bräutigam, M. (2007). In: Blaschek W., Ebel, S., Hackenthal, E., Holzgrabe, U., Keller, K., Reichling, J. and Schulz, V., editors. Plantago. In: Hagers Enzyklopadie der Arzneistoffe und Drogen, Par-Pol. Stuttgart: Springer-Verlag, 6 <sup>th</sup> ed., <b>12</b> , 936-959.
28	USP Dispensing Information, (1994). 14 <sup>th</sup> ed. Laxatives (local). In: (I): Drug information for the health care professional. Rockville M. D.: The United States Pharmacopoeial Convention, 1703-1709.
29	Brunton, L. L. (1996). Agents affecting gastrointestinal water flux and mortality, Emesis and antiemetics; bile acids and pancreatic enzymes. In: Hardman J. G., Limbird, L. E., Molinoff, P. B., Ruddon, R. W. and Gilman, A. G., editors. Goodman & Gilman's. The Pharmacological Basis of Therapeutics, 9 <sup>th</sup> ed. New York: McGraw-Hill, 917-936.
30	Drews, I. M., Kies, C. and Fox, H. M. (1979). Effect of dietary fiber on copper, zinc and magnesium utilization by adolescent boys. <i>Am. J. Clin. Nutr.</i> , <b>32</b> , 1893-1897.
31	<a href="https://www.rxlist.com/consumer_psyllium_metamucil/drugs-condition.htm">https://www.rxlist.com/consumer_psyllium_metamucil/drugs-condition.htm</a>
32	Lewis, J. H. and Weingold, A. A. B. (1985). The use of gastrointestinal drugs during pregnancy and lactation. <i>Am. J. Gastroenterol</i> , <b>80</b> , 912-923.
33	Hulbert, D. C., Thorpe, P. J., Winning, A. J. and Beckett, M. W. (1995). Fatal bronchospasm after oral ingestion of ispaghula. <i>Postgraduate Medical Journal</i> , <b>71</b> , 305–306.
34	Freeman, G. L. (1994). <i>Psyllium</i> hypersensitivity. <i>Annals of allergy</i> , <b>73</b> , 490–492.
35	Knutson, T. W., Bengtsson, U., Dannaes, A., Ahlstedt, S., Stålenheim, G., Hällgren, R. and Knutson, L. (1993). Intestinal reactivity in allergic and nonallergic patients; an approach to determine the complexity of the mucosal reaction. <i>Journal of Allergy and Clinical Immunology</i> , <b>91</b> , 553–559.

36	Weis, M. (1996). <i>Plantago psyllium</i> - přírodní rostlinné projímadlo a vliv na hladiny cholesterolu a triacylglycerolu. [ <i>Plantago psyllium</i> – natural plant laxative and its effect on cholesterol and triacylglycerol levels]. Ceska a Slovenska Gastroenterologie, <b>50</b> (2), 45-47.
37	Singh, B. (2007). <i>Psyllium</i> as therapeutic and drug delivery agent. <i>Int. J. Pharm.</i> ; <b>4</b> , 334(1-2), 1-14.
38	Kumar, A., Kumar, N., Vij, J. C., Sarin, S. K. and Anand, B. S. (1987). Optimum dosage of Ispaghula husk in patients with irritable bowel syndrome: correlation of symptom relief with whole gut transit time and stool weight. <i>Gut</i> , <b>28</b> , 150–155.
39	Qvitzau, S., Matzen, P. and Madsen, P. (1988). Treatment of chronic diarrhoea: loperamide versus ispaghula husk and calcium. <i>Scand. J. Gastroenterol</i> , <b>23</b> , 1237–1240.
40	Marlett, J. A., Kajs, T. M. and Fischer, M. H. (2000). An unfermented gel component of <i>psyllium</i> seed husk promotes laxation as a lubricant in humans. <i>Am. J. Clin. Nutr.</i> , <b>72</b> , 784–789.
41	Mamtani, R., Cimino, J. A., Cooperman, J. M. and Kugel, R. (1990). Comparison of total costs of administering calcium polycarbophil and psyllium mucilloid in an institutional setting. <i>Clin. Ther.</i> , <b>12</b> , 22–25.
42	Heaton, K. W., Radvan, J., Cripps, H., Mountford, R. A., Braddon, F. E. and Hughes, A. O. (1992). Defecation frequency and timing and stool form in the general population: a prospective study. <i>Gut</i> , <b>33</b> , 818–824.
43	Lederle, F. A. (1995). Epidemiology of constipation in elderly patients. Drug utilisation and cost-containment strategies. <i>Drugs Aging</i> , <b>6</b> , 465–469.
44	Karaus, M. and Wienbeck, M. (1991). Colonic motility in humans—a growing understanding. <i>Baillieres Clin. Gastroenterol.</i> , <b>5</b> , 453–478.
45	Bassotti, G., Gaburri, M., Imbimbo, B. P., Morelli, A. and Whitehead, W. E. (1994). Distension-stimulated propagated contractions in human colon. <i>Dig. Dis. Sci.</i> , <b>39</b> , 1955–1960.
46	Fрати-Munari, A. C., Flores-Garduño, M. A., Ariza-Andraca, R., Islas-Andrade, S. and Chávez N. A. (1989). Effect of different doses of <i>Plantago psyllium</i> mucilage on the glucose tolerance test. <b>20</b> (2), 147-152.
47	Rodríguez-Morán, M., Guerrero-Romero, F. and Lazcano-Burciaga, G. (1998). Lipid- and glucose-lowering efficacy of <i>Plantago psyllium</i> in type II diabetes. <i>Journal of Diabetes and its Complications</i> , <b>5</b> (12), 273-278.
48	Fрати Munari, A. C., Benítez, P. W., Raúl A. A. and Casarrubias, M. (1998). Lowering glycemic index of food by acarbose and <i>Plantago psyllium</i> mucilage Summer, <b>29</b> (2), 137-141.
49	Eun, Y. J., Yang, H. H., Un, J. C. and Hyung, J. S. (2016). Anti-obese effects of chitosan and <i>Psyllium</i> husk containing vitamin C in Sprague-Dawley (SD) rats fed a high fat diet. <i>Progress in Nutrition</i> , <b>2</b> (18), 152-160.
50	Fрати-Munari, A. C., Fernández-Harp, J. A., Becerril, M., Chávez-Negrete, A. and Bañales-Ham, M. (1983). Decrease in serum lipids, glycemia and body weight by <i>Plantago psyllium</i> in obese and diabetic patients. <i>Arch. Invest. Med. (Mex)</i> , <b>14</b> (3), 259-268.