

PSYLLII SEMEN

Psyllium Seed

2017

DEFINITION

Psyllium seed consists of the ripe, whole, dry seeds of *Plantago afra* L. (*Plantago psyllium* L.) or *Plantago indica* L. (*Plantago arenaria* Waldstein and Kitaibel).

The material complies with the monograph of the European Pharmacopoeia [Psyllium seed].

CONSTITUENTS

Mucilage polysaccharide (10-15%) [Karawya 1971a; Bräutigam 2007] in the epidermis, consisting of xylose, galacturonic acid, arabinose and rhamnose residues [Karawya 1971a]. The seeds also contain protein (15-20%), fixed oil (5-13%) [Sticher 2015], the trisaccharide planteose [Sticker 2015; Balbaa 1971] and small amounts of phytosterols, triterpenes [Sticker 2015; Balbaa 1971], the iridoid glucoside aucubin and alkaloids (plantagonine, indicaine and indicamine) [Sucher 2015; Balbaa 1971; Karawya 1971b], but no starch [Karawya 1971a; Bräutigam 2007].

CLINICAL PARTICULARS

Therapeutic Indications

Treatment of occasional constipation [Brunton 1996; Kay 1978]. Conditions in which easy defecation with soft stools is desirable, e.g. in cases of anal fissures or haemorrhoids, after rectal or anal surgery, and during pregnancy [Bräutigam 2007; Wichtl 2009; USP Dispensing Information 1994].

Adjuvant symptomatic therapy in cases of diarrhoea from various causes [Brunton 1996].

Posology and method of administration

Dosage

Adults and children over 12 years of age: as a laxative, 10-30 g daily of the seeds [Beutigam 2007; Wichtl 2009] or equivalent preparations; in cases of diarrhoea, up to 40 g daily [Bräutigam 2007] divided into 2-3 doses.

Children 6-12 years: as a laxative, half the adult dose [Dorsch 2002].

Method of administration

For oral administration.

It is very important to take the seeds with a large amount of liquid, e.g. mix approx. 5 g with 150 ml of cool water, stir briskly and swallow as quickly as possible, then maintain adequate fluid intake.

Psyllium seed should preferably be taken at mealtimes; it should not be taken immediately prior to going to bed. Any other medications should be

taken at least 30-60 minutes before psyllium seed in order to avoid delayed absorption.

Duration of administration

In cases of diarrhoea, medical advice should be sought if the symptoms persist for more than 3 days in order to ensure definitive diagnosis of the cause.

Contra-indications

Children under 6 years of age.

Known hypersensitivity to psyllium seed [Brayfield 2014].

Psyllium seed should not be used by patients with the following conditions unless advised by a physician: faecal impaction; undiagnosed abdominal symptoms; a sudden change in bowel habit that persists for more than 2 weeks; rectal bleeding failure to defecate following the use of a laxative; abnormal constrictions in the gastrointestinal tract; potential or existing intestinal obstruction (ileus); diseases of the oesophagus and cardia; megacolon [Bräutigam 2007, Brunton 1996]; diabetes mellitus which is difficult to regulate [Bräutigam 2007, Brunton 1996, Kay 1978].

Special warnings and special precautions for use

A sufficient amount of liquid should always be taken: at least 150 ml of water per 5 g of seed [Brayfield 2014].

Taking psyllium seed without adequate fluid may cause it to swell and block the throat or oesophagus and may cause choking. Intestinal obstruction may occur should adequate fluid intake not be maintained. Do not take psyllium seed if you have ever had difficulty in swallowing or have any throat problems. If you experience chest pain, vomiting, or difficulty in swallowing or breathing after taking it, seek immediate medical attention. Treatment of the elderly and debilitated patients requires medical supervision. Administration to the elderly should be supervised.

In cases of diarrhoea sufficient intake of water and electrolytes is important.

Interaction with other medicaments and other forms of interaction

Enteral absorption of concomitantly administered minerals (e.g. calcium, iron, lithium, zinc), vitamins (B12), cardiac glycosides and coumarin derivatives may be delayed [Bräutigam 2007; USP Dispensing Information 1994; Brunton 1996; Drews 1979; Cummings 1978]. For this reason, other medications should be taken at least 30-60 minutes before

psyllium seed. In the case of insulin-dependent diabetics it may be necessary to reduce the insulin dose [Cummings 1978; Kay 1978].

Pregnancy and lactation

The product can be used during pregnancy and lactation [Lewis 1985].

A risk is not to be expected since the constituents of psyllium seed are not absorbed and have no systemic effects.

Effects on ability to drive and use machines

None known.

Undesirable effects

Flatulence may occur, but generally disappears during the course of treatment.

Abdominal distension and risk of oesophageal or intestinal obstruction and faecal impaction may occur, particularly if psyllium seed is ingested with insufficient fluid.

There is a risk of allergic reaction from inhalation of the powder during occupational exposure. Due to the allergic potential of psyllium seed, patients must be aware of reactions of hypersensitivity including anaphylactic reactions in single cases [Brayfield 2014].

Overdose

Overdosage may cause abdominal discomfort and flatulence, or even intestinal obstruction. Adequate fluid intake should be maintained and management should be symptomatic.

PHARMACOLOGICAL PROPERTIES

Pharmacodynamic properties

Laxative effects

Psyllium seed increases the volume of intestinal contents by the binding of fluid, resulting in increased faecal weights. This leads to physical stimulation of the gut [Bräutigam 2007; Brunton 1996].

Psyllium seed increases stool weight and water content due to the fibre residue, the water bound to that residue [Bräutigam 2007; Brunton 1996] and the increased faecal bacterial mass [Brunton 1996].

Antidiarrhoeal effects

In cases of diarrhoea, psyllium seed binds fluids and thus increases the viscosity of intestinal contents [Brunton 1996], thereby normalizing transit time and frequency of defecation [Bräutigam 2007].

Pharmacokinetic properties

The vegetable fibre of psyllium seed is resistant to digestion in the upper intestinal tract; thus it is not absorbed. Part of the fibre is degraded by colonic bacteria [Bräutigam 2007; Kay 1978].

Preclinical safety data

After 125 days on a diet containing 25% of psyllium seed, albino rats showed a dark pigmentation of the suprarenal gland, the kidney marrow and the liver. Dogs showed a grey colour of the kidneys after being fed a diet containing 25% of psyllium seed for 30 days. Similar effects have not been observed in humans. The pigment probably originates from the black pericarp of *Plantago afra*. When the seeds were extracted with hot water prior to feeding and then fed to the animals as whole seeds no pigmentation was observed [Bräutigam 2007].

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