



25 September 2018
EMA/HMPC/228761/2016
Committee on Herbal Medicinal Products (HMPC)

European Union herbal monograph on *Senna alexandrina* Mill. (*Cassia senna* L.; *Cassia angustifolia* Vahl)¹, fructus Final

Initial assessment	
Discussion in Working Party on European Union monographs and list (MLWP)	Nov 2005 Jan 2006
Adoption by Committee on Herbal Medicinal Products (HMPC) for release for consultation	11 January 2006
End of consultation (deadline for comments)	31 May 2006
Re-discussion in MLWP	September 2006
Adoption by HMPC Monograph (EMA/HMPC/600717/2007) AR (EMA/HMPC/3968/2008) List of references (EMA/HMPC/102303/2008) Overview of comments received during public consultation (EMA/HMPC/439318/2010) HMPC Opinion (EMA/HMPC/756918/2010)	13 July 2006
First revision	
Discussion in Working Party on European Union monographs and list (MLWP)	Sep 2015 Apr 2016 May/Jun 2016 Sep 2016 Jan 2017 May 2017

¹ The botanical name of the herbal substance has been changed, see assessment report (EMA/HMPC/228759/2016) for further details.



Adoption by Committee on Herbal Medicinal Products (HMPC) for release for consultation	18 July 2017
End of consultation (deadline for comments)	12 January 2018
Re-discussion in MLWP	June 2018
Adoption by HMPC	25 September 2018

Keywords	Herbal medicinal products; HMPC; European Union herbal monographs; well-established medicinal use; <i>Senna alexandrina</i> Mill. (<i>Cassia senna</i> L.; <i>Cassia angustifolia</i> Vahl), fructus; Sennae fructus; senna pods
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<p>BG (bulgarski): Сена, плод CS (čeština): plod kasie ostrolisté, plod kasie úzkolisté DA (dansk): Sennesbælg DE (Deutsch): Sennesfrüchte EL (elliniká): καρπός ακτής EN (English): senna pods ES (español): sen, fruto de ET (eesti keel): sennavili FI (suomi): senna, palko FR (français): sené (fruit de) HR (hrvatski): senin plod HU (magyar): alexandriai szenna termés Tinevelly szenna termés IT (italiano): Senna frutto</p>	<p>LT (lietuvių kalba): Senų vaisiai LV (latviešu valoda): Sennu augļi MT (Malti): miżwed is-Senna ta' l-Indja NL (Nederlands): Sennapeul PL (polski): Owoc senesu PT (português): sene da Índia, fruto RO (română): fruct de siminichie, fruct de foi de mamă SK (slovenčina): plod senny úzkolistej SL (slovenščina): plod sene SV (svenska): senna, balja IS (íslenska): NO (norsk): sennesbelg</p>
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European Union herbal monograph on *Senna alexandrina* Mill., fructus

1. Name of the medicinal product

To be specified for the individual finished product.

2. Qualitative and quantitative composition^{2, 3}

Well-established use	Traditional use
<p>With regard to the marketing authorisation application of Article 10(a) of Directive 2001/83/EC</p> <p><i>Senna alexandrina</i> Mill. (<i>Cassia senna</i> L., <i>Cassia angustifolia</i> Vahl) fructus (senna pods)</p> <p>i) Herbal substance</p> <p>Not applicable</p> <p>ii) Herbal preparations</p> <p>Comminuted herbal substance or herbal preparations thereof, standardised</p>	

3. Pharmaceutical form

Well-established use	Traditional use
<p>Standardised comminuted herbal substance as herbal tea for oral use.</p> <p>Standardised herbal preparations in liquid or solid dosage forms for oral use.</p> <p>The pharmaceutical form should be described by the European Pharmacopoeia full standard term.</p>	

4. Clinical particulars

4.1. Therapeutic indications

Well-established use	Traditional use
Indication 1)	

² The declaration of the active substance(s) for an individual finished product should be in accordance with relevant herbal quality guidance.

³ The material complies with the Ph. Eur. monograph (ref.: 0207 and or 0208).

Well-established use	Traditional use
<p>Herbal medicinal product for short-term use in cases of occasional constipation.</p> <p>Indication 2)</p> <p>Herbal medicinal product for bowel cleansing prior to clinical procedures requiring bowel preparation.</p>	

4.2. Posology and method of administration⁴

Well-established use	Traditional use
<p>Posology</p> <p>Indication 1)</p> <p><i>Adolescents over 12 years of age, adults, elderly</i></p> <p>Single dose:</p> <p>Herbal preparations equivalent to 10 – 30 mg hydroxyanthracene derivatives, calculated as sennoside B (photometric method) to be taken once daily at night. The correct individual dose is the smallest required to produce a comfortable soft-formed motion.</p> <p>The use in children under 12 years of age is contraindicated (see section 4.3 Contraindications).</p> <p>The pharmaceutical form must allow lower dosages.</p> <p>Indication 2)</p> <p><i>Adolescents over 12 years of age, adults, elderly</i></p> <p>Single dose:</p> <p>Herbal preparations equivalent to 150 mg hydroxyanthracene derivatives, calculated as sennoside B (photometric method) in the beginning of the afternoon of the day before the intended examination. A glass of water should be added. The use in children under 12 years of age is contraindicated (see section 4.3 Contraindications).</p> <p>Duration of use</p>	

⁴ For guidance on herbal substance/herbal preparation administered as herbal tea or as infusion/decoction/macerate preparation, please refer to the HMPC 'Glossary on herbal teas' (EMA/HMPC/5829/2010 Rev.1).

Well-established use	Traditional use
<p>Indication 1)</p> <p>Not to be used for more than 1 week. Usually it is sufficient to take this medicinal product up to two to three times during that week.</p> <p>If the symptoms persist during the use of the medicinal product, a doctor or a pharmacist should be consulted.</p> <p>See also section 4.4 Special warnings and precautions for use.</p> <p>Indication 2)</p> <p>Single use only according to instructions specified.</p> <p>(Example: The preparation starts with a three days diet of clear fluids, the herbal preparation is to be applied between 14:00-16:00h of the day before the examination followed by a glass of water and drinking 2 l of clear fluids until bedtime. No solid food intake until examination.)</p> <p>Method of administration</p> <p>Indications 1) and 2)</p> <p>Oral use</p>	

4.3. Contraindications

Well-established use	Traditional use
<p>Hypersensitivity to the active substance.</p> <p>Cases of intestinal obstructions and stenosis, atony, appendicitis, inflammatory bowel diseases (e.g. Crohn's disease, ulcerative colitis), abdominal pain of unknown origin, severe dehydration state with water and electrolyte depletion.</p> <p>Pregnancy and lactation (see section 4.6 and 5.3)</p> <p>Children under 12 years of age.</p>	

4.4. Special warnings and precautions for use

Well-established use	Traditional use
<p>Long-term use of stimulant laxatives should be avoided, as use for more than a brief period of</p>	

Well-established use	Traditional use
<p>treatment may lead to impaired function of the intestine and dependence on laxatives. If laxatives are needed every day the cause of the constipation should be investigated. Senna pod preparations should only be used if a therapeutic effect cannot be achieved by a change of diet or the administration of bulk forming agents.</p> <p>Patients taking cardiac glycosides, antiarrhythmic medicinal products, medicinal products inducing QT-prolongation, diuretics, adrenocorticosteroids or liquorice root, have to consult a doctor before taking senna pods concomitantly.</p> <p>Like all laxatives, senna pods should not be taken by patients suffering from faecal impaction and undiagnosed, acute or persistent gastro-intestinal complaints, e.g. abdominal pain, nausea and vomiting, unless advised by a doctor, because these symptoms can be signs of potential or existing intestinal blockage (ileus).</p> <p>When preparations containing senna pods are administered to incontinent adults, pads should be changed more frequently to prevent extended skin contact with faeces.</p> <p>Patients with kidney disorders should be aware of possible electrolyte imbalance.</p> <p>If the symptoms worsen during the use of the medicinal product, a doctor or a pharmacist should be consulted.</p> <p>For liquid dosage forms containing ethanol the appropriate labelling for ethanol, taken from the 'Guideline on excipients in the label and package leaflet of medicinal products for human use', must be included.</p>	

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

Well-established use	Traditional use
<p>Hypokalaemia (resulting from long-term laxative abuse) potentiates the action of cardiac glycosides and interacts with antiarrhythmic medicinal products. Concomitant use with diuretics, adrenocorticosteroids and liquorice root may</p>	

Well-established use	Traditional use
enhance loss of potassium.	

4.6. Fertility, pregnancy and lactation

Well-established use	Traditional use
<p>Pregnancy</p> <p>The use during pregnancy is contraindicated because experimental data concerning a genotoxic risk of several anthranoids, e.g. emodin and aloemodin.</p> <p>Lactation</p> <p>The use during lactation is contraindicated because after administration of anthranoids, active metabolites, such as rhein, were excreted in breast milk in small amounts.</p> <p>Fertility</p> <p>No fertility data are available (see section 5.3 preclinical safety data).</p>	

4.7. Effects on ability to drive and use machines

Well-established use	Traditional use
No studies on the effect on the ability to drive and use machines have been performed.	

4.8. Undesirable effects

Well-established use	Traditional use
<p>Hypersensitivity:</p> <p>Hypersensitivity reactions may occur.</p> <p>Gastrointestinal disorders:</p> <p>Senna pods may produce abdominal pain and spasm and passage of liquid stools, in particular in patients with irritable colon. However, these symptoms may also occur generally as a consequence of individual over-dosage. In such cases dose reduction is necessary.</p> <p>Furthermore, chronic use may cause pigmentation of the intestinal mucosa (pseudomelanosis coli), which usually recedes when the patient stops</p>	

Well-established use	Traditional use
<p>taking the preparation.</p> <p>Kidney and Urinary tract symptoms:</p> <p>Long term use may lead to water and electrolyte imbalance and may result in albuminuria and haematuria.</p> <p>Yellow or red-brown (pH dependent) discolouration of urine by metabolites, which is not clinically significant, may occur during the treatment.</p> <p>The frequencies are not known.</p> <p>If other adverse reactions not mentioned above occur, a doctor or a pharmacist should be consulted.</p>	

4.9. Overdose

Well-established use	Traditional use
<p>The major symptoms of overdose/abuse are griping pain and severe diarrhoea with consequent losses of fluid and electrolytes. Treatment should be supportive with generous amounts of fluid. Electrolytes, especially potassium, should be monitored. This is especially important in the elderly.</p> <p>Chronic ingested overdoses of anthranoid containing medicinal products may lead to toxic hepatitis.</p>	

5. Pharmacological properties

5.1. Pharmacodynamic properties

Well-established use	Traditional use
<p>Pharmacotherapeutic group: contact laxatives</p> <p>Proposed ATC code: A06AB06</p> <p>1,8-dihydroxyanthracene derivatives possess a laxative effect. The β-O-linked glycosides (sennosides) are not absorbed in the upper gut; they are converted by bacteria of the large intestine into the active metabolite (rhein anthrone).</p>	

Well-established use	Traditional use
<p>There are two different mechanisms of action:</p> <p>(1) Stimulation of the motility of the large intestine resulting in accelerated colonic transit.</p> <p>(2) Influence on secretion processes by two concomitant mechanisms viz. inhibition of absorption of water and electrolytes (Na⁺, Cl⁻) into the colonic epithelial cells (antiabsorptive effect) and increase of the leakiness of the tight junctions and stimulation of secretion of water and electrolytes into the lumen of the colon (secretagogue effect) resulting in enhanced concentrations of fluid and electrolytes in the lumen of the colon.</p> <p>Defaecation takes place after a delay of 8 - 12 hours due to the time taken for transport to the colon and metabolism into the active compound.</p>	

5.2. Pharmacokinetic properties

Well-established use	Traditional use
<p>The β-O-linked glycosides (sennosides) are neither absorbed in the upper gut nor split by human digestive enzymes. They are converted by the bacteria of the large intestine into the active metabolite (rhein anthrone). Aglycones are absorbed in the upper gut. Animal experiments with radio-labeled rhein anthrone administered directly into the caecum demonstrated absorption <10%. In contact with oxygen, rhein anthrone is oxidised into rhein and sennidins, which can be found in the blood, mainly in the form of glucuronides and sulphates. After oral administration of sennosides, 3 - 6% of the metabolites are excreted in urine; some are excreted in bile.</p> <p>Most of the sennosides (ca. 90%) are excreted in faeces as polymers (polyquinones) together with 2 - 6% of unchanged sennosides, sennidins, rhein anthrone and rhein. In human pharmacokinetic studies with senna pods powder (20 mg sennosides), administered orally for 7 days, a maximum concentration of 100 ng rhein/ml was found in the blood. An accumulation of rhein was</p>	

Well-established use	Traditional use
<p>not observed.</p> <p>Active metabolites, e.g. rhein, pass in small amounts into breast milk. Animal experiments demonstrated that placental passage of rhein is low.</p>	

5.3. Preclinical safety data

Well-established use	Traditional use
<p>There are only few preclinical data available for senna pods or preparations thereof.</p> <p>In a 90-day rat study, senna pods were administered at dose levels from 100 mg/kg of up to 1500 mg/kg (human equivalence dose of 16-242 mg/kg). In all groups epithelial hyperplasia of the large intestine of minor degree was found and was reversible within the 8-week recovery period. The hyperplastic lesions of the forestomach epithelium were reversible as well. Dose-dependent tubular basophilia and epithelial hypertrophy of the kidneys were seen at a dose of, or greater than 300 mg/kg per day without functional affection. These changes were also reversible. Storage of a brown tubular pigment led to a dark discoloration of the renal surface and still remained to a lesser degree after the recovery period. No alterations were seen in the colonic nervous plexus. A no-observable-effect-level (NOEL) could not be obtained in this study.</p> <p>Senna pods, extracts thereof and several hydroxyl anthracene derivatives (except sennosides, rhein and sennidins) were mutagenic and genotoxic in several <i>in vitro</i> test systems. However, for senna and aloe-emodin this was not proven in <i>in vivo</i> systems.</p> <p>In long term carcinogenicity studies with senna pods effects on kidneys and colon/caecum were reported.</p>	

6. Pharmaceutical particulars

Well-established use	Traditional use

Well-established use	Traditional use
Not applicable	

7. Date of compilation/last revision

25 September 2018