

14 January 2020 EMA/HMPC/509409/2019 Committee on Herbal Medicinal Products (HMPC)

Addendum to Assessment report on Arctium lappa L., radix

Rapporteur(s)	Gert Laekeman
Peer-reviewer	Marie Heroutova

HMPC decision on review of monograph <i>Arctium lappa</i> L., radix adopted on 16 September 2010	16 January 2019
Call for scientific data (start and end date)	From 15 February 2019 to 15 May 2019
Adoption by Committee on Herbal Medicinal Products (HMPC)	15 January 2020

Review of new data on Arctium lappa L., radix

Periodic review (from 2011 to 2019)

Scientific data (e.g. non-clinical and clinical safety data, clinical efficacy data)

Pharmacovigilance data (e.g. data from EudraVigilance, VigiBase, national databases)
 Scientific/Medical/Toxicological databases: Pubmed (Using the search terms "Arctium lappa" and "Burdock root" from 2010 to 2019, Search date: September 2019, 244 hits and 65 hits, respectively), Embase (Using the search terms "Arctium lappa", "Arctium lappa" and "root", Search date: September 2019, 543 hits and 118 hits, respectively)
 Other

Regulatory practice

- Old market overview in AR (i.e. products fulfilling 30/15 years on the market)
- New market overview (including pharmacovigilance actions taken in member states)

New products identified during review:

 Official address
 Domenico Scarlattilaan 6 • 1083 HS Amsterdam • The Netherlands

 Address for visits and deliveries
 Refer to www.ema.europa.eu/how-to-find-us

 Send us a question
 Go to www.ema.europa.eu/contact

 Telephone +31 (0)88 781 6000
 An agency of the European Union



© European Medicines Agency, 2020. Reproduction is authorised provided the source is acknowledged.

Active substance	Indication	Pharmaceutical form Strength Posology Duration of use	Regulatory Status (date, Member State, Type of Marketing authorisation)
Dry extract (DER 3- 5:1); extraction solvent: ethanol 50% (V/V)	Traditional herbal medicinal product used in treatment of seborrheic skin conditions.	1 hard capsule contains 200 mg of dry extract (DER 3-5:1); extraction solvent: ethanol 50% (V/V) Posology: <i>Adults</i> : 1 capsule twice a day. Duration of use: 4 weeks	TU (1994, FR) *
Dry extract (DER 2- 4:1); extraction solvent: ethanol 70% (V/V)	A traditional herbal medicinal product used to increase the amount of urine for the purpose of flushing the urinary tract to assist in minor urinary complaints. This is based on traditional use only.	 hard capsule contains 399 mg of dry extract Posology: Adults and elderly: 2 capsules 3 times daily. Duration of use: if symptoms worsen or do not improve after 2 weeks, a doctor or a qualified healthcare practitioner should be consulted. 	TU (2011, UK) **

* The dry extract does not have 30 years of tradition.

** No publicly available data supporting the required period of use.

Referral

 \boxtimes Ph.Eur. monograph: no Ph.Eur monograph available.

Other

Consistency (e.g. scientific decisions taken by HMPC)

Dublic statements or other decisions taken by HMPC

 $\hfill\square$ Consistency with other monographs within the therapeutic area

Other

Availability of new information (i.e. likely to lead to a relevant change of the monograph)

Scientific data	Yes	No
New non-clinical safety data likely to lead to a relevant change of the monograph		\boxtimes
New clinical safety data likely to lead to a relevant change of the monograph		\boxtimes
New data introducing a possibility of a new list entry		\boxtimes
New clinical data regarding the paediatric population or the use during pregnancy and lactation likely to lead to a relevant change of the monograph		\boxtimes

New clinical studies introducing a possibility for new WEU indication/preparation		\square
Other scientific data likely to lead to a relevant change of the monograph		
Regulatory practice	Yes	No
New herbal substances/preparations with 30/15 years of TU		\square
New herbal substances/preparations with 10 years of WEU		\square
Other regulatory practices likely to lead to a relevant change of the monograph		\square
Referrals likely to lead to a relevant change of the monograph		\square
New / Updated Ph. Eur. monograph likely to lead to a relevant change of the		\square
monograph		
Consistency	Yes	No
New or revised public statements or other HMPC decisions likely to lead to a relevant change of the monograph		\boxtimes
Relevant inconsistencies with other monographs within the therapeutic area that require a change of the monograph		
Other relevant inconsistencies that require a change of the monograph		\square

Summary and conclusions on the review

During the review several hundreds of new references not yet available during the first/previous assessment were identified.

No references were provided by Interested Parties during the Call for data.

33 references were considered to be relevant for the assessment.

No references justify a revision of the monograph.

No revision is considered required because:

- There are no new clinical studies justifying the acceptance of new herbal medicinal products for WEU.
- There are no new preparations that fulfil the criteria for traditional use.
- There are no new data that justify the consideration of a list entry.
- There are no new clinical data that could justify the use by special patient populations.
- There are no new regulatory data that justify a change of the existing monograph.
- There are no new safety concerns.
- No inconsistencies are identified in the existing monograph.
- New references were retrieved between 2010 and 2019. These references deal with preclinical studies of *Arctium lappa radix* extracts or powder not relevant for the existing therapeutic indications in the monograph (2010):
 - (1) Traditional herbal medicinal product used to increase the amount of urine to achieve flushing of the urinary tract as an adjuvant in minor urinary tract complaints.
 - (2) Traditional herbal medicinal product used in temporary loss of appetite.
 - (3) Traditional herbal medicinal product used in treatment of seborrhoeic skin conditions.

References

- a) References relevant for the assessment:
 - Annunziata G, Luigi Barrea L, Ciampaglia R. *et al. Arctium lappa* contributes to the management of type 2 diabetes mellitus by regulating glucose homeostasis and improving oxidative stress: A critical review of *in vitro* and *in vivo* animal - based studies. *Phytotherapy Research* 2019, 33:2213–2220.
 - Bok S.-H, Cho SS, Bae CS, Park D.-H, Park K-M. Safety of 8-weeks oral administration of *Arctium lappa* L. *Lab Anim Res* 2017, 33(3):251-255.
 - Carlottoa J, de Souzaa LM, Baggio CH, *et al.* Polysaccharides from *Arctium lappa* L.: Chemical structure and biological activity. *International Journal of Biological Macromolecules* 2016, 91:954–960.
 - Chan YS, Cheng L.-N, Wu J.-H *et al.* A review of the pharmacological effects of *Arctium lappa* (burdock). *Inflammopharmacol* 2011, 19:245–254.
 - De Almeida ABA, Sanchez-Hidalgo M, Ramon Martin AR *et al.* Anti-inflammatory intestinal activity of *Arctium lappa* L. (*Asteraceae*) in TNBS colitis model. *Journal of Ethnopharmacology* 2013, 146:300–310.

- Dias MM, Zuza O, Riania LR, *et al. In vitro* schistosomicidal and antiviral activities of *Arctium lappa* L. (*Asteraceae*) against *Schistosoma mansoni* and *Herpes simplex* virus-1. *Biomedicine & Pharmacotherapy* 2017, 94:489–498.
- Don RASG, Yap MKK. Arctium lappa L. root extract induces cell death via mitochondrialmediated caspase-dependent apoptosis in Jurkat human leukemic T cells. Biomedicine & Pharmacotherapy 2019, 110:918–929.
- Fierascu RC, Georgieva MI, Fierascu I. Mitodepressive, antioxidant, antifungal and antiinflammatory effects of wild-growing Romanian native *Arctium lappa* L. (*Asteraceae*) and *Veronica persica* Poiret (*Plantaginaceae*). *Food and Chemical Toxicology* 2018, 111:44–52.
- Gao Q, Yang M, Zuo Z. Overview of the anti-inflammatory effects, pharmacokinetic properties and clinical efficacies of arctigenin and arctiin from *Arctium lappa* L. *Acta Pharmacologica Sinica* 2018, 39:787–801.
- Ghafari F, Reza Rajabi M, Mazoochi T. Comparing Apoptosis and Necrosis Effects of Arctium Lappa Root Extract and Doxorubicin on MCF7 and MDA-MB-231 Cell Lines. Asian Pac J Cancer Prev 2017, 18(3):795-802.
- Ha M-S, Kim J.-H, Kim Y.-S, Kim D.-Y. Effects of aquarobic exercise and burdock intake on serum blood lipids and vascular elasticity in Korean elderly women. *Experimental Gerontology* 2018, 101:63–68.
- Hayashi K, Narutaki K, Nagaoka Y, Hayashi T, Uesato S. Therapeutic Effect of Arctiin and Arctigenin in Immunocompetent and Immunocompromised Mice Infected with Influenza A Virus. *Biol Pharm Bull* 2010, 33:1199—1205.
- Hou B, Wang W, Gao H, Cai S, Wang C. Effects of aqueous extract of *Arctium lappa* L. roots on serum lipid metabolism. *Journal of International Medical Research* 2018, 46:158–167.
- Hsieh C-J, Kuo P.-L, Hsu Y.-C, Huang Y.-F, Tsai E-M, Hsu Y-L. Arctigenin, a dietary phytoestrogen, induces apoptosis of estrogen receptor-negative breast cancer cells through the ROS/p38MAPK pathway and epigenetic regulation. *Free Radical Biology and Medicine* 2014, 67:159–170.
- Huang T-C, Tsai S-S, Liu L-F, Liu Y-L, Liu H-J, Chuang K-P. Effect of *Arctium lappa* L. in the dextran sulfate sodium colitis mouse model. *World J Gastroenterol* 2010, 16:4193-4199.
- JianFeng C, PengYing Z, Wei X-C, TaoTao H, YunGui B, KaoShan C. Effect of aqueous extract of Arctium lappa L. (burdock) roots on the sexual behavior of male rats. Complementary and Alternative Medicine 2012, 12:1-8.
- Jiang Y-Y, Yu J, Li Y-B, *et al.* Extraction and antioxidant activities of polysaccharides from roots of *Arctium lappa* L. *International Journal of Biological Macromolecules* 2019, 123:531–538.
- Kuo D-H, Hung M-C, Hung C-M, *et al.* Body weight management effect of burdock (*Arctium lappa* L.) root is associated with the activation of AMP-activated protein kinase in human HepG2 cells. *Food Chemistry* 2012, 134:1320–1326.
- Kew Science. <u>http://powo.science.kew.org/taxon/urn:lsid:ipni.org:names:60441917-2</u> accessed on 2 September 2019.

- Leon C, Yu-Lin L. Chinese Medicinal Plants, Herbal Drugs and Substitutes. Kew Publishing, Royal Botanical Gardens, London 2017, 210-219.
- Li X, Zhao Z, Kuanga P, Shi X, Wanga Z, Guo L. Regulation of lipid metabolism in diabetic rats by *Arctium lappa* L. polysaccharide through the PKC/NF-κB pathway. *International Journal of Biological Macromolecules* 2019, 136:115–122.
- Maghsoumi-Norouzabad L, Alipoor B, Abed R, Eftekhar Sadat B, Mesgari-Abbasi M, Asghari Jafarabadi M. Effects of *Arctium lappa* L. (Burdock) root tea on inflammatory status and oxidative stress in patients with knee osteoarthritis. *Int J Rheum Dis* 2016, 19:255-61.
- Miglani A, Manchanda RK. Observational study of *Arctium lappa* in the treatment of acne vulgaris. *Homeopathy* 2014, 103:203-7.
- Mota da Silva L, Allemand A, Mendes DGB, *et al.* Ethanolic extract of roots from *Arctium lappa* L. accelerates the healing of acetic acid-induced gastric ulcer in rats: Involvement of the antioxidant system. *Food and Chemical Toxicology* 2013, 51:179–187.
- Pomari E, Stefanon B, Colitti M. Effect of *Arctium lappa* (burdock) extract on canine dermal fibroblasts. *Veterinary Immunology and Immunopathology* 2013, 156:159–166.
- Predes FS, Ruiz ALTG, Carvalho JE, Foglio MA, Dolder H. Antioxidative and *in vitro* antiproliferative activity of *Arctium lappa* root extracts. *BMC Complement Altern Med* 2011, 11:25.
- Rajasekharan SK, Ramesh S, Satish AS, Lee J. Antibiofilm and Anti-β-Lactamase Activities of Burdock Root Extract and Chlorogenic Acid against *Klebsiella pneumoniae*. *J Microbiol Biotechnol* 2017, 27:542-551.
- Sohn EH, Jang S-A, Joo H, *et al.* Anti-allergic and anti-inflammatory effects of butanol extract from *Arctium Lappa* L. *Clinical and Molecular Allergy* 2011, 9:4.
- Suliman Al-Gebaly A. Ameliorative Effect of *Arctium lappa* Against Cadmium Genotoxicity and Histopathology in Kidney of Wistar Rat. *Pak J Biol Sci* 2017, 20:314-319.
- Tian X, Li-Guo L-P, Hu X-L, *et al.* Protective Effects of *Arctium lappa* L. Roots Against Hydrogen Peroxide-Induced Cell Injury and Potential Mechanisms in SH-SY5Y Cells. *Cell Mol Neurobiol* 2015, 35:335–344.
- Wang Z, Li P, Wang C, *et al.* Protective effects of *Arctium lappa* L. root extracts (AREs) on high fat diet induced quail atherosclerosis. *BMC Complementary and Alternative Medicine* 2016, 16:6. DOI 10.1186/s12906-016-0987-2.
- Wang Y, Zhang N, Kan J, *et al.* Structural characterization of water-soluble polysaccharide from *Arctium lappa* and its effects on colitis mice. *Carbohydrate Polymers* 2019, 213:89–99.
- Yang WS, Lee SR, Joon Y. Antiallergic Activity of Ethanol Extracts of Arctium lappa L. Undried Roots and Its Active Compound, Oleamide, in Regulating FccRIMediated and MAPK Signaling in RBL-2H3 Cells. J Agric Food Chem 2016, 64:3564–3573.

b) References that justify the need for the revision of the monograph:

None

Rapporteur's proposal on revision

Revision needed, i.e. new data/findings of relevance for the content of the monograph;

No revision needed, i.e. no new data/findings of relevance for the content of the monograph.

HMPC decision on revision

Revision needed, i.e. new data/findings of relevance for the content of the monograph

No revision needed, i.e. no new data/findings of relevance for the content of the monograph

The HMPC agreed not to revise the monograph, assessment report and list of references on *Arctium lappa* L., radix, by consensus.