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LIST OF REFERENCES SUPPORTING THE ASSESSMENT REPORT ON:

**Althaeae radix
Althaea officinalis L., radix
(marshmallow root)**

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Alcaraz M.J., Moroney M., Hoult J.R.S. (1989). Effects of hypolaetin- β -O-glucoside and its aglycone in vivo and in vitro tests for anti-inflammatory agents. *Planta Med.*, 55: 107-108

Barnes J., Anderson L., Phillipson D. (2002). *Herbal Medicines: A guide for healthcare professionals*. 3rd ed., London, Pharmaceutical Press, 331-332.

Bässler D. (2005). Retrospective observational study of the application of Phytohustil® syrup for children up to 12 years of age. Steigerwald Arzneimittelwerk GmbH (unpublished study)

Bäumler S. (2007). *Heilpflanzen Praxis Heute*. Elsevier, München, 131-132

Beaune A., et al. (1966). Anti-inflammatory experimental properties of marshmallow: its potentiating action on the local effects of corticoids. *Therapie*, 21: 341-347.

Blumenthal M. and Busse W.R. (1998). *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines*. Austin, American Botanical Council, 167

Blumenthal M., Goldberg A. and Brinckmann J. (2000). *Herbal Medicine: Expanded Commission E Monographs*. Austin, American Botanical Council, 244-248

Bradley P.R. (1992). *British Herbal Compendium vol. 1. Marshmallow root.*, BHMA, Bournemouth GB, 151-153

British Pharmaceutical Codex (BPC) 1949. London, Pharmaceutical Press, 74: 1291-1292

Capek P., Rosík J., Kardošová A. et al. (1987). Polysaccharides from the roots of the marshmallow (*Althaea officinalis* L. var. *robusta*): Structural features of an acidic polysaccharide. Carbohydr. Res., 164: 443-452

Capek P., Toman R., Kardošová A., et al. (1983). Polysaccharides from the roots of the marshmallow (*Althaea officinalis* L.): Structure of an Arabinan. Carbohydr. Res., 117: 133-140

Capek P., Toman R., Rosík J. et al. (1984). Polysaccharides from the roots of *Althaea officinalis* L.: Structural Features of D-Glucans. Collect. Czech. Chem. Commun., 49: 2674-2679

Capek P., Uhrín D., Rosík J. et al. (1988). Polysaccharides from the roots of the marshmallow (*Althaea officinalis* L., var. *robusta*): dianhydrides of oligosaccharides of the aldose type. Carbohydr. Res., 182: 160-165

Český lékopis 2005 (Czech Pharmacopoeia 2005), 2777 and 3132

Deutsches Arzneibuch, 6. Ausgabe, 1926, 391-392

Deutsches Arzneimittel Codex, 2004: E-020

Dorsch W., Loew D., Meyer-Buchtela E., Schilcher H. (2002). Kinderdosierungen von Phytopharmaka: Althaeae radix. Kooperation Phytopharmaka, Bonn, 30-31

ESCOP Monographs (European Scientific Co-operative on Phytotherapy) 2003. The Scientific Foundation for Herbal medicinal Products, 2nd ed. Exeter, 32-35

European Pharmacopoeia 6.0, 2008, 01/2008:1126 corrected 6.0: 2339

Farmakopea Polska wyd VI (2002), Althaeae sirupus, 913

Fasse M., Zieseniss E., Bässler D. (2005). Dry irritating cough in children – a post-marketing surveillance involving marshmallow syrup. Paed., 11: 3-8.

Franz G. (1966). Die Schleimpolysaccharide von *Althaea officinalis* und *Malva silvestris*. Planta Med., 14: 90-110

Franz G. (1989). Polysaccharides in Pharmacy: current applications and future concepts. Planta Medica 55: 493-497

Franz G., Madaus A. (1990). Stabilität von Polysacchariden. Deutsche Apotheker Zeitung 130 (40): 2194 - 2199

Gudej J. (1989). Determination of flavonoids in leaves, flowers and roots of *Althaea officinalis* L. Farm. Pol., 46: 153-155

Gudej J. (1991). Flavonoids, phenolic acids and coumarins from the roots of *Althaea officinalis*. Planta Med., 57: 284-285

Hänsel R., Keller K. and Rimpler H. (1992). Hagers Handbuch der Pharmazeutischen Praxis. 5th ed. Band 4 Drogen A-D. Berlin, Springer Verlag, 236-238.

VIth Hungarian Pharmacopoeia (1970) vol. III, 13 -15

VIth Hungarian Pharmacopoeia (1970) vol. IV, 11-15

Iauk L., Lo Bue A.M., Milazzo I. et al. (2003). Antibacterial activity of medicinal plant extracts against periodontopathic bacteria. *Phytother. Res.*, 17: 599-604

Ionkova I. (1992). Alternative sources of biological active substances from *Althaea officinalis* L. var. *rusalka*. *CR Acad. Bulg. Sci.*; 9: 137-141

Kern W., List P.H., Hörhammer L. (1969). *Hagers Handbuch der Pharmazeutischen Praxis*. 4th ed. Band A-AL. Berlin, Springer Verlag, 1237-1248

Kobayashi A., Hachya A., Ohuchi A. et al. (2002). Inhibitory mechanism of an extract of *Althaea officinalis* L. on endothelin-1-induced melanocyte activation. *Biol. Pharm. Bull.*, 25: 229-234

Madaus G. (1938). *Lehrbuch der biologischen Heilmittel*. Band I. Leipzig. 492-497

Madaus A., Blaschek W., Franz G. (1987). *Althaeae radix mucilage polysachharides*, isolation, characterization and stability [Abstract]. *Pharm. Weekblad Sci. ed.*, 9: 239

Martindale, *The Extra Pharmacopoeia* (1977). London, The Pharmaceutical Press, 918

Mascolo N., Autore M.G., Capasso F., Menghini A. and Fasulo M.P. (1987). Biological screening of italian medical plants for anti-inflammatory activity. *Phytotherapy Research* 1: 28-31

Müller-Limmroth W., Fröhlich H.-H. (1980). Wirkungsnachweis einiger phytotherapeutischer Expektorantien auf den mukoziliären Transport. *Fortschr. Med.*, 98: 95-101

Newall C.A., Anderson L.A., Philipson J.D. (1996). *Herbal Medicine: A guide for healthcare professionals*. The Pharmaceuticals Press, London, 188

Ninov S., Ionkova I., Kolev D. (1992). Constituents from roots of *Althaea officinalis* L. var. *rusalka*, Malvaceae. *Fitoterapia*, 43: 474

NMCD 2008. *Natural Medicines Comprehensive Database*, Stockton, California; <http://www.naturaldatabase.com> 24.1.2008

Nosalová G., Strapková A., Capek P. et al. (1992a). Antitussive activity of an α -D-glucan isolated from the root of *Althaea officinalis* L., var. *robusta*. *Pharm. Pharmacol. Lett.*, 2: 195-197

Nosalová G., Strapková A., Kardošová A. et al. (1993). Antitussive activity of a rhamnogalacturonan isolated from the roots of *Althaea officinalis* L., var. *robusta*. *Carbohydr. Chem.*, 12: 589-596

Nosalová G., Strapková A., Kardošová A. et al. (1992). Antitussive Wirkung des Extraktes und der Polysaccharide aus Eibisch (*Althaea officinalis* L., var. *robusta*). *Pharmazie*, 47: 224-226

Österreichisches Arzneibuch 1990, Radix Althaeae, Sirupus Althaeae

PDR 1998. Fleming T. (ed.). PDR for Herbal Medicines. 1st ed., Medical Economics Company, Montvale, 635-637

Perez G.R.M., Zavala S.M.A., Perez G.S., Perez G.C. (1998). Antidiabetic effect of compounds isolated from plants. *Phytomedicine*, 5: 55-75.

Recio M.C. et al. (1989). Antimicrobial activity of selected plants employed in the Spanish Mediterranean area. Part II. *Phytotherapy Res.*, 3: 77-80

Rosík J., Kardošová R., Toman R., Capek P. (1984). Izolácia a charakterizácia slizov z ibiša lekárskeho (*Althaea officinalis* L.) a slezu lesného maurského (*Malva silvestris* L., ssp. *mauritanica* (L.) Thell.) *Českoslov. Farm.*, 33: 68-71

Rouhi H., Ganji F. (2007). Effect of *Althaea officinalis* on cough associated with ACE inhibitors, *Pakistan Journal of Nutrition*, 6 (3): 256 - 258

Schmidgall J., Schnetz E., Hensel A. (2000). Evidence for bioadhesive effects of polysaccharides and polysaccharide-containing herbs in an ex vivo bioadhesion assay on buccal membranes. *Planta Med.*, 66: 48-53

Tomoda M., Shimizu N., Oshima Y. et al. (1987). Hypoglycemic activity of twenty plant mucilages and three modified products. *Planta Med.*, 53: 8-12

Tomoda M., Kaneko S., Ebashi M. (1977). Plant Mucilages XXIV. Isolation and characterization of a mucous polysaccharide Althaea-mucilage O, from the roots of *Althaea officinalis*. *Chem. Pharm. Bull.*, 25: 1357-1362

Tomoda M., Satoh N., Shimada K. (1980). Plant Mucilages XXIV. The structural features of Althaea-mucilage O, a representative mucous polysaccharide from the roots of *Althaea officinalis*. *Chem. Pharm. Bull.*, 28: 824-830

Villar A., Gasco M.A., Alcaraz M.J. (1984). Anti-inflammatory and anti-ulcer properties of hypolaetin- β -glucoside a novel plant flavonoid. *J. Pharm. Pharmacol.*, 36: 820-823

Villar A., Gasco M.A., Alcaraz M.J. (1987). Some aspects of the inhibitory activity of hypolaetin- β -glucoside in acute inflammation. *J. Pharm. Pharmacol.*, 39: 502-507

Wagner H., Proksch A. (1985). Immunostimulatory drugs of fungi and higher plants. In: Wagner H., Hikino H., Farnsworth N.R., eds. *Economic and Medicinal Plant Research* vol. 1. Academic Press, London 1985: 113-153

WHO (2002). WHO Monographs on Selected Medicinal Plants vol. 2. World Health Organization, Geneva, 5-11.

Wichtl 1994. Bisset N.G. (Ed.). Wichtl M. Herbal drugs and phytopharmaceuticals. CRC Press, Stuttgart 1994, 65-66

Yamada H., Nagai T., Cyong J.-C. et al. (1985). Relationship between chemical structure and anti-complementary activity of plant polysaccharides. *Carbohydrate Res.*, 144: 101-111