

**Cyclodextrins**

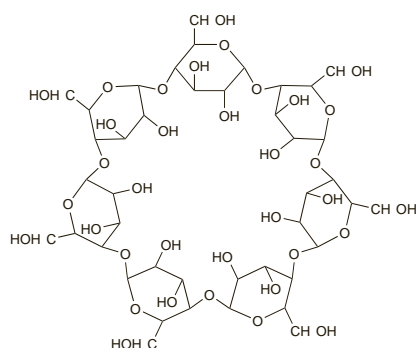
Ciclodextrinas.

**Alfadex** (BAN, rINN)Alfadexas; Alfadexsi; Alfadexum; Alpha Cyclodextrin; Alphacyclodextrin;  $\alpha$ -Cyclodextrin; Cyclohexaamylose; Cyclomaltohexose. Cyclomaltohexaose.

Альфадек

C<sub>36</sub>H<sub>60</sub>O<sub>30</sub> = 972.8.  
CAS — 10016-20-3.**Pharmacopoeias.** In *Eur.* (see p.vii). Also in *USNF*.**Ph. Eur. 6.2** (Alfadex). A white or almost white, amorphous or crystalline powder. Freely soluble in water and in propylene glycol; practically insoluble in dehydrated alcohol and in dichloromethane. Store in airtight containers.**USNF 26** (Alfadex). A white or almost white, amorphous or crystalline, powder. Freely soluble in water and in propylene glycol; practically insoluble in dehydrated alcohol and in dichloromethane. Store in airtight containers.**Betadex** (BAN, USAN, rINN)Betadexsi; Betadexas; Bédadex; Betadexum;  $\beta$ -Cyclodextrin; E459. Cyclo- $\alpha$ -(1 $\rightarrow$ 4)-D-heptaglucopyranoside.

Бетадек

C<sub>42</sub>H<sub>70</sub>O<sub>35</sub> = 1135.  
CAS — 7585-39-9.**Pharmacopoeias.** In *Chin.* and *Eur.* (see p.vii). Also in *USNF*.**Ph. Eur. 6.2** (Betadex). A white or almost white, amorphous or crystalline powder. Sparingly soluble in water; practically insoluble in alcohol and in dichloromethane; freely soluble in propylene glycol. Store in airtight containers.**USNF 26** (Betadex). A nonreducing cyclic compound composed of seven alpha-(1-4) linked D-glucopyranosyl units. It is a white, practically odourless, fine crystalline powder. Soluble 1 in 54 of water. Store in airtight containers.**Hydroxypropylbetadex**Hidroksiipilbetadexas; Hydroxypropylbetadex; Hidroksiipilbetadexsi; Hydroxypropylbetadex; Hydroxypropylbetadexum; 2-Hydroxypropyl- $\beta$ -cyclodextrin.**Pharmacopoeias.** In *Eur.* (see p.vii). Also in *USNF*.**Ph. Eur. 6.2** (Hydroxypropylbetadex). A white or almost white, amorphous or crystalline powder. Freely soluble in water and in propylene glycol.**USNF 26** (Hydroxypropyl Betadex). A white or almost white, amorphous or crystalline powder. Freely soluble in water and in propylene glycol.**Profile**

Cyclodextrins, such as alfadex and betadex, are produced by the enzymatic degradation of starch and are used as carrier molecules for drug delivery systems. Hydroxypropylbetadex, a derivative of betadex, is also used.

## ◊ References.

- Ridgway K. Drug release rates: cyclodextrin complexes. *Pharm J* 1990; **245**: 344-5.
- Szejtli J. Cyclodextrins: properties and applications. *Drug Invest* 1990; **2** (suppl 4): 11-21.
- El Shaboury MH. Physical properties and dissolution profiles of tablets directly compressed with  $\beta$ -cyclodextrin. *Int J Pharmaceutics* 1990; **63**: 95-100.
- Stella VJ, Rajewski RA. Cyclodextrins: their future in drug formulation and delivery. *Pharm Res* 1997; **14**: 556-67.
- Lofsson T, Olafsson JH. Cyclodextrins: new drug delivery systems in dermatology. *Int J Dermatol* 1998; **37**: 241-6.
- Redenti E, et al. Drug/cyclodextrin/hydroxy acid multicomponent systems: properties and pharmaceutical applications. *J Pharm Sci* 2000; **89**: 1-8.
- Lofsson T, Masson M. Cyclodextrins in topical drug formulations: theory and practice. *Int J Pharm* 2001; **225**: 15-30.

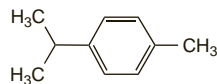
The symbol † denotes a preparation no longer actively marketed

8. Loftsson T, Stefansson E. Cyclodextrins in eye drop formulations: enhanced topical delivery of corticosteroids to the eye. *Acta Ophthalmol Scand* 2002; **80**: 144-50.9. Dass CR. Cyclodextrins and oligonucleotide delivery to solid tumours. *J Drug Target* 2004; **12**: 1-9.10. Kaur IP, et al. Role of cyclodextrins in ophthalmics. *Curr Drug Deliv* 2004; **1**: 351-60.11. Challa R, et al. Cyclodextrins in drug delivery: an updated review. *AAPS PharmSciTech* 2005; **6**: E329-E357.**Cymene**

Cimeno; p-Cymene; p-Cymol; p-Cymen. 4-Isopropyl-1-methylbenzene; 4-Isopropyltoluene.

C<sub>10</sub>H<sub>14</sub> = 134.2.

CAS — 25155-15-1; 99-87-6 (p-cymene).



(p-cymene)

**Profile**

Cymene is used in perfumery. It has also been used as a topical local analgesic for the relief of pain in rheumatic conditions.

**Cynara**

Alcachofa; Alcachôfra; Artichaut; Artichaut, feuille d'; Artichoke Leaf; Artičokový list; Cynarae folium; Lišč karczocha.

**Pharmacopoeias.** In *Eur.* (see p.vii).**Ph. Eur. 6.2** (Artichoke Leaf). The whole or cut, dried leaf of *Cynara scolymus*. It contains a minimum 0.8% of chlorogenic acid (C<sub>16</sub>H<sub>18</sub>O<sub>6</sub> = 354.3), calculated with reference to the dried drug. Protect from light.**Profile**Cynara, the leaf of the globe artichoke, *Cynara scolymus* (Compositae), is reputed to have diuretic and choleric properties. It may also have some hypolipidaemic activity.

## ◊ References.

- Joy JF, Haber SL. Clinical uses of artichoke leaf extract. *Am J Health-Syst Pharm* 2007; **64**: 1904-9.

**Preparations****Proprietary Preparations** (details are given in Part 3)**Arg.:** Alcachofa Plus; Chofitol; Cynarex; **Austria:** Cynarin; Hepar-POS; **Belg.:** Cynarol; Hebutcol; **Braz.:** Alcachofrax; Chophytol; **Fr.:** Chophytol; Gallexier†; Hepanephrol; **Ger.:** aar gamma N; Ardeycholan; Carminagal N†; Cefacynar; Chologogum; Cyna Bilasan†; Cynacur; Cynalip duo†; Cynarix N†; Hepagalin N; Hepar SL; Hepar-POS; Heparstadi†; Hewechol Artischockendragees; Lipel; Losapan†; Natu-Hepa; Naturreiner†; ratio-Hepar†; Valverde Artischocke†; **Pol.:** Cynacholin; Cynarex; Hepacynar; Liproxal; **Port.:** Hebranephrol†; **Rus.:** Chophytol (Хофитол); **Switz.:** Chophytol; Hepa-S; Natu-Hepa.**Multi-ingredient:** **Arg.:** Arcelgasol; Bagohepat; Bilidren; Bilosan Compuesto†; Boldina; Digenat; Dioxicolagol; HDG; Hepar; Hepatalgina; Hepatodirectol; Herbaccion Dig Fresh†; Herbaccion Digestivo†; Lorbihepatic; Metiogen; Palatrol†; **Austral.:** Extralife Liva-Care; Lifesystem Herbal Formula 7 Liver Tonic†; Liver Tonic Herbal Formula 6†; Livstim†; Livton Complex†; **Austria:** Cynarin comp; **Braz.:** Alcafelol†; Alcaflor†; Chofranina; Colachofra; Composto Emagrecedor†; Digestron†; Emagrevit†; Figatil†; Hecrosine B12†; Hepatoregus†; Jurubleno†; Lisotex; Olocynan†; Solvobil; **Canad.:** Milk Thistle; **Cz.:** Cynarosan†; **Fr.:** Actibil†; Benetransit; Canol; Elixir Spark; Heparlem; Hepax; Vegelax†; **Ger.:** Bilicura Forte†; Carmol Magen-Galle-Darm; Cynarzym N†; Gallexier; Galloselect M†; Pascobillin novo†; **Hong Kong:** Hepatofalk; **Indon.:** Biocholes; **Ital.:** Cinarepa; Colax; Digelax†; Epagest†; Vadolax†; **Malaysia:** Dandelion Complex†; **Mex.:** Bagohepat; Chofabol; Heparpedren; Ifuchol; **Pol.:** Cardiobonisol; Rapacholin AC; Rapacholin C; Sylcynar; **Rus.:** Herbion Drops for the Gallbladder (Тербион Капли Желчегонные); **Spain:** Cynaro Bilina; Lipograsil; Menabil Complex†; Nico Hepatosun; **Switz.:** Bilifuge; Boldocynara; Demonatur; Gouttes pour le foie et la bile; Heparfelin; Phytomed Hepato†; Stago N†; Strath Gouttes pour le foie et la bile; Tisane hepatique et biliaire; **UK:** Bio-Strath Artichoke Formula; **Venez.:** Cynascool.**Cynarine** (rINN)

Cinarina; Cynarin; Cynarinum; Cynaryna; 1,5-Dicaffeoylquinic Acid. 1-Carboxy-4,5-dihydroxy-1,3-cyclohexylene bis(3,4-dihydroxycinnamate).

Цинарин

C<sub>25</sub>H<sub>24</sub>O<sub>12</sub> = 516.5.  
CAS — 1182-34-9; 1884-24-8.**Profile**

Cynarine is an active ingredient of cynara (above). It has been used as a choleric.

**Preparations****Proprietary Preparations** (details are given in Part 3)**Multi-ingredient:** **Arg.:** HDG; **Austria:** Trommgallol.**Cypress**

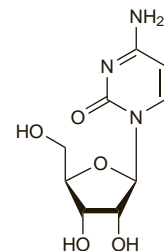
Italian Cypress; Mediterranean Cypress.

**Profile**Italian or Mediterranean cypress (*Cupressus sempervirens*, Cupressaceae) is included in preparations for peripheral vascular disorders.

It is the source of cypress oil. Cypress oil is used in preparations for the relief of cough and cold symptoms and in aromatherapy.

**Preparations****Proprietary Preparations** (details are given in Part 3)**Multi-ingredient:** **Fr.:** Arterase; Circulatonic; Mediflor Tisane Circulation du Sang No 12; Veinostase; **Ital.:** Colostrum; Venalta; **Port.:** Solubeol†; **Spain:** Natusor Circusil†; Proctosor†; Ruscime†; Trophires†; Vapores Pyt; **Switz.:** Eucapinol; Makaphyt Baume†; Novital.**Cytidine**Cytosine Riboside. 4-Amino-1- $\beta$ -D-ribofuranosyl-2-(1H)-pyrimidinone.

ЦИТИДИН

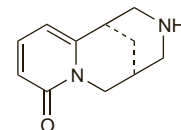
C<sub>9</sub>H<sub>13</sub>N<sub>3</sub>O<sub>5</sub> = 243.2.  
CAS — 65-46-3.**Profile**

Cytidine is an endogenous cytosine nucleoside involved in many biological processes; it is one of the components of nucleic acids (p.2355). Cytidine is used in preparations containing other nucleosides in the treatment of corneal damage. It has also been used in preparations for liver disorders, anaemias, and as a tonic. Disodium cytidine phosphate is included in preparations for neuralgia, neuritis, and myopathies and has also been used for peripheral and cerebral vascular disorders; the triphosphate has also been used.

**Preparations****Proprietary Preparations** (details are given in Part 3)**Multi-ingredient:** **Arg.:** Nucleo CMP†; **Belg.:** Vitacic; **Braz.:** Nucleo CMP; **Chile:** Citoneuron; **Cz.:** Laevadosin†; **Ger.:** Keltican N; **Hung.:** Vitacic†; **Ital.:** Centrum; **Mex.:** Nucleo CMP; **Mon.:** Vitacic; **Rus.:** Vitacic (Витацик); **Spain:** Cefabol; Nucleo CMP**Cytisine**

Baptitoxine; Labumine; Sophorine; Ulexine. 1,2,3,4,5,6-Hexahydro-1,5-methano-8H-pyrido[1,2-a][1,5]diazocin-8-one.

ЦИТИЗИН

C<sub>11</sub>H<sub>14</sub>N<sub>2</sub>O = 190.2.  
CAS — 485-35-8.**Profile**

Cytisine is a highly toxic alkaloid found in laburnum (p.2329) and some other leguminous plants. It resembles nicotine (p.2352) in its actions and has been given orally as an aid to smoking cessation (p.2354). The dose is 1.5 mg 6 times daily for 3 days which is then gradually reduced over the next 3 weeks to 1.5 to 3 mg daily for the final 5 days of treatment. Treatment of adverse effects of cytisine is as described for Nicotine, p.2352.

A 0.15% solution of cytisine known as Cytitone has been used intravenously or intramuscularly in some countries as a respiratory stimulant.

## ◊ References.

- Etter J-F. Cytisine for smoking cessation: a literature review and a meta-analysis. *Arch Intern Med* 2006; **166**: 1553-9.
- Tutka P, Zatoński W. Cytisine for the treatment of nicotine addiction: from a molecule to therapeutic efficacy. *Pharmacol Rep* 2006; **58**: 777-98.