UK: Ellimans; Goddards Embrocation; Phytex; Potters Gees Linctus; Sanderson's Throat Specific; ***USA:*** Acetasol; Acetasol HC; Acid Jelly; Auralgan; Borofair Otic; Burow's; Fem pH; Klout; Otic Domeboro; Star-Otic; Tridesilon†; VoSoL HC†; VoSoL†; ***Venez.:*** Gynovit; Kayivis; Saxacid.

Acetohydroxamic Acid *(USAN, rINN)*

N-Acetyl Hydroxyacetamide; Acide Acétohydroxamique; Ácido acetohidroxámico; Acidum Acetohydroxamicum; AHA.

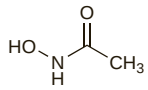
Ацетогидроксамовая Кислота

$C_2H_5NO_2$ = 75.07.

CAS — 546-88-3.

ATC — G04BX03.

ATC Vet — QG04BX03.



Pharmacopoeias. In *US*.

USP 31 (Acetohydroxamic Acid). White, slightly hygroscopic, crystalline powder. Freely soluble in water and in alcohol; very slightly soluble in chloroform. Store in airtight containers at a temperature between 8° and 15°.

Adverse Effects and Precautions

Phlebitis, thromboembolism, haemolytic anaemia, and iron-deficiency anaemia have occurred. Bone-marrow depression has been reported in *animal* studies. Other adverse effects include headache, gastrointestinal disturbances, alopecia, rash (particularly after ingestion of alcohol), trembling, and mental symptoms including anxiety and depression. Blood counts and renal function should be monitored regularly during treatment. Patients with acute renal failure should not be given acetohydroxamic acid.

Pregnancy. Studies in *animals* indicate that acetohydroxamic acid is teratogenic.

Interactions

Acetohydroxamic acid chelates iron given orally, resulting in reduced absorption of both. Ingestion with alcohol may precipitate skin rash.

Pharmacokinetics

Acetohydroxamic acid is rapidly absorbed from the gastrointestinal tract with peak serum concentrations being reached within 1 hour. The plasma half-life is reported to be up to 10 hours, but may be longer in patients with impaired renal function. Acetohydroxamic acid is partially metabolised to acetamide, which is inactive; up to about two-thirds of a dose may be excreted unchanged in the urine.

Uses and Administration

Acetohydroxamic acid acts by inhibiting bacterial urease, thus decreasing urinary ammonia concentration and alkalinity. It is used in the prophylaxis of struvite renal calculi (p.2181) and as an adjunct in the treatment of chronic urinary-tract infections (p.199).

Acetohydroxamic acid is given orally in a usual dose of 250 mg three or four times daily. The total dose should not exceed 1.5 g daily. Children have been given 10 mg/kg daily in 2 or 3 divided doses. Dosage should be adjusted in patients with renal impairment (see below).

Administration in renal impairment. Acetohydroxamic acid should not be given to patients with serum-creatinine concentrations in excess of about 220 micromoles/litre. If the concentration is between 160 and 220 micromoles/litre, the maximum daily dose should be 1 g and the dosing interval should be extended to every 12 hours.

Preparations

USP 31: Acetohydroxamic Acid Tablets.

Proprietary Preparations (details are given in Part 3)

Spain: Uronefrex; ***USA:*** Lithostat.

Acetylleucine *(rINN)*

Acetileucina; Acétylleucine; Acetylleucinum; RP-7542. *N*-Acetyl-DL-leucine.

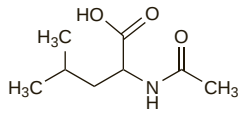
Ацетилейцин

$C_8H_{15}NO_3$ = 173.2.

CAS — 99-15-0.

ATC — N07CA04.

ATC Vet — QN07CA04.



Profile

Acetylleucine has been used in the treatment of vertigo (p.565) in usual oral doses of up to 2 g daily, in divided doses, or 1 g daily by intravenous injection. Higher doses have occasionally been used.

Preparations

Proprietary Preparations (details are given in Part 3)

Fr.: Tanganil.

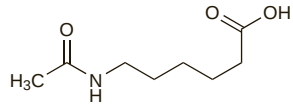
Acexamic Acid *(BAN, rINN)*

Acide Acexamique; Ácido acexámico; Acidum Acexamicum; CY-153; Epsilon Acetamidocaproic Acid. 6-Acetamidohexanoic acid.

Ацексамовая Кислота

$C_8H_{15}NO_3$ = 173.2.

CAS — 57-08-9 (acexamic acid); 70020-71-2 (zinc acexamate).



Pharmacopoeias. *Eur.* (see p.vii) includes Zinc Acexamate.

Profile

Acexamic acid is related structurally to the antifibrinolytic agent aminocaproic acid (p.1053). Acexamic acid, usually as the calcium or sodium salt, has been used topically or systemically to promote the healing of ulcers and various other skin lesions. Zinc acexamate has been given for peptic ulcer disease.

Preparations

Proprietary Preparations (details are given in Part 3)

Arg.: Plastenan; Restaurene; ***Belg.:*** Plastenan; ***Fr.:*** Plastenan†; ***Mex.:*** Recoveron; ***Port.:*** Plastesol†; ***Spain:*** Copinal.

Multi-ingredient: ***Arg.:*** Bagoderm; Cicatrizol; Lisoderma; Plastenan con Neomicina; ***Fr.:*** Trofoseptine†; ***Mex.:*** Dermatolona; Recoveron N; Recoveron NC; ***Port.:*** Plastenan Neomicina†; ***Spain:*** Plaskine Neomicina; Unitul Complex†.

Achillea

Achillée millefeuille; Aquilea; Cickafarkfű; Kraujažolių žolė; Milfoil; Millefolii herba; Řebříčková nať; Rölleka; Schafgarbe; Siankärsämö; Yarrow; Ziele krwawnika.

CAS — 8022-07-9 (yarrow root oil).

Pharmacopoeias. In *Eur.* (see p.vii).

Ph. Eur. 6.2 (Yarrow). The whole or cut, dried flowering tops of yarrow, *Achillea millefolium*. It contains not less than 2 mL/kg of essential oil and not less than 0.02% of proazulenes, expressed as chamazulene ($C_{14}H_{16}$ = 184.3), both calculated with reference to the dried drug. Protect from light.

Profile

Achillea has been used in herbal medicine. It has been stated to have diaphoretic, anti-inflammatory, and other miscellaneous properties. It has been reported to cause contact dermatitis.

Yarrow root oil is used in aromatherapy.

Homoeopathy. Achillea has been used in homoeopathic medicines under the following names: Achillea millefolium; Millefolium; Achillea ex herba; Millef.

◊ References.

1. Phillipson JD, Anderson LA. Herbal remedies used in sedative and antirheumatic preparations: part 2. *Pharm J* 1984; **233:** 111–15.
2. Chandler RF. Yarrow. *Can Pharm J* 1989; **122:** 41–3.
3. Anonymous. Final report on the safety assessment of yarrow (Achillea millefolium) extract. *Int J Toxicol* 2001; **20** (suppl 2): 79–84.

Preparations

Proprietary Preparations (details are given in Part 3)

Cz.: Gallentee†; Nat Rebricku; Rebrickovy Caj, Rebrickova Nat; ***Mex.:*** Blancaler.

Multi-ingredient: ***Austral.:*** Diaco; Flavons; ***Austria:*** Abfuhrtee St Severin; Amersan; Gallen- und Lebertee St Severin; Mariazeller; Menodoron; ***Canad.:*** Original Herb Cough Drops; ***Cz.:*** Amersan; Cajova Smes pri Redukcni Diete†; Cicaderma; Hemoral†; Hertz- und Kreislauftee†; Kamillan Plus†; Perospir†; Projimava; Species Urologicae Planta; Stomatosan†; Ungolen†; Zaludecni Cajova Smes; ***Fr.:*** Cicaderma; Gonaxine; Menoxine; Tisane Hepatique de Hoerdt; ***Ger.:*** Alasenn; Amara-Tropfen; Aristochol N†; Cheiranthol†; Floradix Multipretten N; Gallexier; Kamillan Plus†; Marianon†; Nervosana†; Sedovent; Stomachysat N†; Tonsilgon; ***Hung.:*** Hemorid; Noditran†; ***Ital.:*** Forticrin; Lozione Same Urto; Pik Gel; ***Pol.:*** Amarosal; Artecholin; Artecholwex; Cholavisol; Dyspepsin; Enterosol; Gastrobonisol; Hemorol; Liv 52; Nefrobonisol; Reumosol; Salviasept; Sanofil; ***Port.:*** Cicaderma; Fade Cream†; ***Rus.:*** Liv 52 (Лив 52); Original Grosser Bittner Balsam (Оригинальный Большой Бальзам Биттнера); Tonsilgon N (Тонзилгон Н); ***S.Afr.:*** Amara; Clairo; Menodoron; ***Spain:*** Jaquesor†; Menstrunat†; Natusor Circusil†; Natusor Gastrolen†; Natusor Jaquesan†; ***Switz.:*** Baume†; Gastrosan; Kernosan Heidelberger Poudre; Pommade au Baume; Tisane hepatique et biliaire; Tisane pour l'estomac; ***UK:*** Catarrheeze; Rheumatic Pain Remedy; Tabritis; Wellwoman.

Acid Alpha Glucosidase

Acid Maltase; α-Glucosidasa; Lysosomal α-glucosidase.

Alglucosidase Alfa *(USAN, rINN)*

Alglucosidasa alfa; Alglucosidasum Alfa; rhGAA.

Альглюкозидаза Альфа

CAS — 420784-05-0.

ATC — A16AB07.

ATC Vet — QA16AB07.

Profile

Alglucosidase alfa is a recombinant form of human acid alpha glucosidase given as enzyme replacement therapy for the treatment of the lysosomal storage disease Pompe disease (glycogen storage disease type II). This is a rare fatal autosomal recessive disorder caused by a deficiency of acid α-glucosidase, which cleaves α-1,4- and α-1,6-glucosidic linkages in lysosomal glycogen to liberate glucose. Glycogen accumulation results in progressive myopathy, especially of the skeletal muscles and heart.

Alglucosidase alfa is given intravenously using an infusion pump in doses of 20 mg/kg once every 2 weeks. The total volume of fluid, which is determined by the patient's body-weight, should be infused over about 4 hours. The infusion rate should be increased gradually: the initial rate should not exceed 1 mg/kg per hour; once the patient can tolerate this rate, it may be increased every 30 minutes by 2 mg/kg per hour with monitoring of vital signs before each increase; the maximum infusion rate is 7 mg/kg per hour.

Infusion reactions are common with alglucosidase alfa; symptoms may resolve on decreasing the infusion rate, temporarily stopping the infusion, and/or use of antihistamines and/or antipyretics, which may also be given as pre-treatment. Severe reactions may require stopping the infusion immediately. Serious hypersensitivity reactions, including anaphylactic shock, have also been reported during infusion of alglucosidase alfa.

◊ References.

1. Amalfitano A, *et al.* Recombinant human acid alpha-glucosidase enzyme therapy for infantile glycogen storage disease type II: results of a phase I/II clinical trial. *Genet Med* 2001; **3:** 132–8.
2. Van den Hout JM, *et al.* Enzyme therapy for Pompe disease with recombinant human alpha-glucosidase from rabbit milk. *J Inherit Metab Dis* 2001; **24:** 266–74.
3. Kishnani PS, Howell RR. Pompe disease in infants and children. *J Pediatr* 2004; **144** (suppl): S35–S43.
4. Hunley TE, *et al.* Nephrotic syndrome complicating alpha-glucosidase replacement therapy for Pompe disease. Abstract: *Pediatrics* 2004; **114:** 1080. Full version: http://www.pediatrics.org/cgi/content/full/114/4/e532 (accessed 17/01/06)
5. Kishnani PS, *et al.* Chinese hamster ovary cell-derived recombinant human acid α-glucosidase in infantile-onset Pompe disease. *J Pediatr* 2006; **149:** 89–97.
6. van der Beek NA, *et al.* Pompe disease (glycogen storage disease type II): clinical features and enzyme replacement therapy. *Acta Neurol Belg* 2006; **106:** 82–6.
7. Kishnani PS, *et al.* Recombinant human acid α-glucosidase: major clinical benefits in infantile-onset Pompe disease. *Neurology* 2007; **68:** 99–109.
8. Fukuda T, *et al.* Acid alpha-glucosidase deficiency (Pompe disease). *Curr Neurol Neurosci Rep* 2007; **7:** 71–7.
9. Rossi M, *et al.* Long-term enzyme replacement therapy for Pompe disease with recombinant human alpha-glucosidase derived from Chinese hamster ovary cells. *J Child Neurol* 2007; **22:** 565–73.

Preparations

Proprietary Preparations (details are given in Part 3)

Cz.: Myozyme; ***Fr.:*** Myozyme; ***Port.:*** Myozyme; ***UK:*** Myozyme; ***USA:*** Myozyme.

Multi-ingredient: ***Austral.:*** Digestaid; ***Canad.:*** Digesta.

Acid Fuchsine

Acid Magenta; Acid Roseine; Acid Rubine; CI Acid Violet 19; Colour Index No. 42685; Fucsina ácida.

Profile

Acid fuchsine is the disodium or diammonium salt of the trisulfonic acid of magenta. It is used as a microscopic stain and a pH indicator.

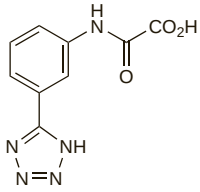
Acitazanolast *(rINN)*

Acitazanolastum; WP-871. 3′-(1*H*-tetrazol-5-yl)oxanilic acid.

Ацитазаноласт

$C_9H_7N_5O_3$ = 233.2.

CAS — 114607-46-4.



Profile

Acitazanolast is a leukotriene inhibitor used as the hydrate in a concentration of 0.1 or 0.3% in eye drops for the treatment of allergic conjunctivitis (p.564).

Preparations

Proprietary Preparations (details are given in Part 3)
Jpn: Zepelin.

Aconite

Acetylbenzoylaconine (aconitine); Aconit.; Aconit napel; Aconite Root; Aconiti Tuber; Acónito; Aconitum napellus; Monkshood Root; Radix Aconiti; Wolfsbane Root. 8-Acetoxy-3,11,18-trihydroxy-16-ethyl-1,6,19-trimethoxy-4-methoxymethylaconitan-10-yl benzoate (aconitine).

$C_{34}H_{47}NO_{11}$ = 645.7 (aconitine).

CAS — 8063-12-5 (aconite); 302-27-2 (aconitine).

NOTE. Wolfsbane is also used as a common name for arnica flower (p.2260).

Description. Aconite consists of the dried tuberous root of *Aconitum napellus* agg. (Ranunculaceae). It contains a number of alkaloids, the main pharmacologically active one being aconitine.

Pharmacopoeias. In *Chin.*

Adverse Effects and Treatment

Aconite has variable effects on the heart leading to heart failure. It also affects the CNS.

Symptoms of aconite poisoning may appear within minutes or up to 2 hours after oral ingestion; in fatal poisoning death usually occurs within 12 hours, although with larger doses it may be instantaneous.

Initial symptoms (and an important diagnostic feature) are tingling sensations of the tongue, mouth, fingers, and toes followed by generalised paraesthesia. Other symptoms include nausea, vomiting, diarrhoea, muscle weakness, skeletal muscle paralysis, and difficult respiration; also sweats, chills and a feeling of intense cold may occur. Respiratory paralysis, hypotension, and cardiac arrhythmias may develop in severe cases.

Although the benefits of gastric decontamination are uncertain, gastric lavage may be tried in patients within one hour of life-threatening oral poisoning; activated charcoal may also be considered. Patients should be observed and monitored, and corrective and supportive treatment given as necessary. Arrhythmias are relatively resistant to treatment, although atropine has been tried for bradycardia.

Poisoning. Reports of poisoning with aconite.

1. Kelly SP. Aconite poisoning. *Med J Aust* 1990; **153:** 499.
2. Tai Y-T, *et al.* Cardiotoxicity after accidental herb-induced aconite poisoning. *Lancet* 1992; **340:** 1254–6.
3. Kolev ST, *et al.* Toxicity following accidental ingestion of Aconitum containing Chinese remedy. *Hum Exp Toxicol* 1996; **15:** 839–42.
4. Mak W, Lau CP. A woman with tetraparesis and missed beats. *Hosp Med* 2000; **61:** 438.
5. Imazio M, *et al.* Malignant ventricular arrhythmias due to Aconitum napellus seeds. *Circulation* 2000; **102:** 2907–8.
6. Chan TYK. Incidence of herb-induced aconitine poisoning in Hong Kong: impact of publicity measures to promote awareness among the herbalists and the public. *Drug Safety* 2002; **25:** 823–8.
7. Lowe L, *et al.* Herbal aconite tea and refractory ventricular tachycardia. *N Engl J Med* 2005; **353:**1532.

Uses and Administration

Aconite liniments have been used in the treatment of neuralgia, sciatica, and rheumatism. Sufficient aconitine may be absorbed through the skin to cause poisoning; liniments should never be applied to wounds or abraded surfaces. Aconite should not be used internally because of its low therapeutic index and variable potency; however it is reported to be a common ingredient in traditional Chinese remedies and is also an ingredient of some cough mixtures.

Homoeopathy. Aconite has been used in homoeopathic medicines.

Preparations

Proprietary Preparations (details are given in Part 3)

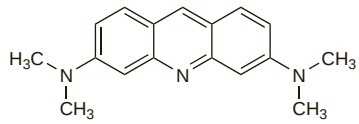
Multi-ingredient: ***Arg.:*** No-Tos Adultos; ***Austria:*** Rheuma; ***Belg.:*** Colimax†; Eucalyptine Pholcodine Le Brun†; Saintbois; ***Braz.:*** Agrimel†; Expectomel; Gotas Nican†; Limao Bravo†; Melagriao; Pectal†; Xarope de Caraguata†; Xarope Peitoral de Ameixa Composto†; Xarope Sao Joao†; ***Chile:*** Gotas Nican†; ***Cz.:*** Homeovox; Pleumolysin; ***Ital.:*** Lactocol; ***Port.:*** Anti-Gripe†; Calmarum†; ***Spain:*** Encialina†.

Acridine Orange

Naranja de acridina. 3,6-Bis(dimethylamino)acridine.

$C_{17}H_{19}N_3$ = 265.4.

CAS — 494-38-2.



Profile

Acridine orange is a dye with antiseptic properties. It has been used as a diagnostic stain in microbiology.

For details of the antiseptic properties of acridine derivatives, see p.1624.

Diagnostic use. Acridine orange has been used for the diagnostic staining of malarial parasites.[1] For the quantitative buffy coat method, acridine orange is used to stain the parasites in a blood sample that is then centrifuged, and the area just below the buffy coat is examined under a fluorescence microscope. It has been described as easier and quicker to use than the standard examination of stained blood films. However, this method is not specific for diagnosis of malarial type, gives only a rough indication of infection intensity, and can give false-positive results. Acridine orange has also been tried for the staining of blood slides.[2-5]

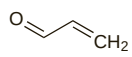
1. Warhurst DC, Williams JE. ACP Broadsheet no 148, July 1996, Laboratory diagnosis of malaria. *J Clin Pathol* 1996; **49:** 533–8.
2. Gay F, *et al.* Direct acridine orange fluorescence examination of blood slides compared to current techniques for malaria diagnosis. *Trans R Soc Trop Med Hyg* 1996; **90:** 516–18.
3. Craig MH, Sharp BL. Comparative evaluation of four techniques for the diagnosis of Plasmodium falciparum infections. *Trans R Soc Trop Med Hyg* 1997; **91:** 279–82.
4. Tarimo DS, *et al.* Appraisal of the acridine orange method for rapid malaria diagnosis at three Tanzanian district hospitals. *East Afr Med J* 1998; **75:** 504–7.
5. Lema OE, *et al.* Comparison of five methods of malaria detection in the outpatient setting. *Am J Trop Med Hyg* 1999; **60:** 177–82.

Acrolein

Acraldehyde; Acrialdehído; Acroleína; Acrylaldehyde; Acrylic Aldehyde. Prop-2-enal.

C_3H_4O = 56.06.

CAS — 107-02-8.



Profile

Acrolein is a volatile, highly flammable liquid at ordinary temperature and pressure. It has various industrial uses, but is also a toxic byproduct of combustion and may be present in exhaust gases, tobacco smoke, and smoke from fires. It is irritant to the skin and may cause skin burns. Ingestion of acrolein produces severe gastrointestinal distress. The vapour causes lachrymation and pulmonary irritation. Inhalation may cause pulmonary oedema and permanent lung damage.

Acrolein is a metabolite of cyclophosphamide (p.702) and may be responsible for the latter's bladder toxicity.

◊ References.

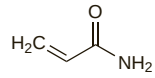
1. WHO. Acrolein. *IPCS Health and Safety Guide 67*. Geneva: WHO, 1991. Available at: http://www.inchem.org/documents/hsg/hsg/hsg067.htm (accessed 23/07/08)
2. WHO. Acrolein. *Environmental Health Criteria 127*. Geneva: WHO, 1992. Available at: http://www.inchem.org/documents/ehc/ehc/ehc127.htm (accessed 23/07/08)
3. Kehrer JP, Biswal SS. The molecular effects of acrolein. *Toxicol Sci* 2000; **57:** 6–15.

Acrylamide

Acrilamida; Akryloamid; Amida acrílica. Propenamide.

C_3H_5NO = 71.08.

CAS — 79-06-1.



Profile

Acrylamide is highly toxic and irritant; it can be absorbed through unbroken skin. Symptoms of poisoning include burning and ulceration of the mouth and throat following ingestion. Excessive sweating is common and other symptoms may include numbness of limbs, paraesthesias, and muscle weakness. CNS effects such as somnolence, confusion, hallucinations, ataxia, tremors, dysarthria, and nystagmus may occur depending on the severity of exposure. Peripheral neuropathies may appear several weeks after severe acute exposure or as a result of chronic exposure. Gastric lavage may be tried in patients within one hour of ingestion; activated charcoal may also be considered. Contamination of eyes and skin should be irrigated and treated as for burns. Patients should be observed and monitored, and corrective and supportive treatment given as necessary.

Acrylamide has various industrial applications, including use as a plasticiser and a waterproof 'chemical grout'.

◊ References.

1. Kesson CM, *et al.* Acrylamide poisoning. *Postgrad Med J* 1977; **53:** 16–17.
2. WHO. Acrylamide *IPCS Health and Safety Guide 45*. Geneva: WHO, 1991. Available at: http://www.inchem.org/documents/hsg/hsg/hsg045.htm (accessed 31/03/06)

Food toxicity. Concerns have been expressed by the Swedish National Food Administration about the level of acrylamide they found in certain cooked foods, particularly those exposed to very high temperatures such as fried foods, and the potential carcinogenic risk. However, it has been acknowledged that, although the results have been replicated in other international laboratories, the total sample size is small and none of the methods being used have so far been validated.[1] One subsequent population-based study failed to find any excess risk or convincing trend of cancer of the bowel, bladder, or kidney in high consumers of foods with a high or moderate acrylamide content.[2] The joint FAO/WHO Expert Committee on Food Additives (JECFA)[3] reviewed data provided by 24 countries on acrylamide in food analysed between 2002 and 2004. Their recommendations were for re-evaluation of the effects of acrylamide on completion of studies of carcinogenicity and neurotoxicity, and that efforts to reduce the concentrations of acrylamide in food should continue.

1. Kapp C. WHO urges more research into acrylamide in food. *Lancet* 2002; **360:** 64.
2. Mucci LA, *et al.* Dietary acrylamide and cancer of the large bowel, kidney, and bladder: absence of an association in a population-based study in Sweden. *Br J Cancer* 2003 **88:** 84–9.
3. FAO/WHO. Evaluation of certain food contaminants: sixty-fourth report of the joint FAO/WHO expert committee on food additives. *WHO Tech Rep Ser 930* 2006. Available at: http://whqlibdoc.who.int/trs/WHO_TRS_930_eng.pdf (accessed 18/07/08)

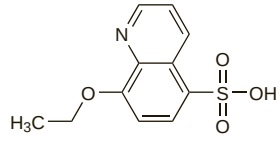
Actinoquinol Sodium *(USAN, rINNM)*

Actinoquinol sódico; Actinoquinol Sodique; Natrii Actinoquinolum; Sodium Etoquinol; Sodium Tequinol. Sodium 8-ethoxy-5-quinolinesulfonate.

Натрий Актинохинол

$C_{11}H_{10}NNaO_4S$ = 275.3.

CAS — 15301-40-3 (actinoquinol); 7246-07-3 (actinoquinol sodium).



(actinoquinol)

Profile

Actinoquinol and actinoquinol sodium are ingredients of eye drop preparations intended to protect the eyes from the effects of light.

Preparations

Proprietary Preparations (details are given in Part 3)
Austria: Ultra Augenschutz.

Multi-ingredient: ***Fr.:*** Uvicol; ***Ger.:*** durautra; ***Ital.:*** Fotofil.