# THE MERCK INDEX

AN ENCYCLOPEDIA OF
CHEMICALS AND DRUGS



EIGHTH EDITION

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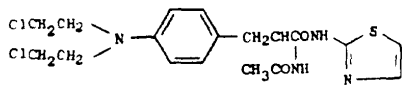
Needles from light petroleum, mp 62–63°. bp 296°. $n_D^{11}$ 1.5719. $LD_{50}$ i.p. in guinea pigs: 0.0275 ml/100 g. Practically insoluble in water; soluble in alcohol, ether, glacial acetic acid, carbon tetrachloride, chloroform, petr ether.

**Asarum.** Wild ginger; Canada snakeroot; Indian ginger. Dried rhizome and roots of *Asarum canadense* L., *Aristolochiaceae*. *Habit.* Canada to N. Carolina and Kansas. *Constit.* Acrid resin, aromatic volatile oil, methyl eugenol.
MED USE: Has been used as an aromatic.

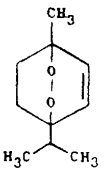
**Asazol.** α-Acetamido-*p*-[bis(2-chloroethyl)amino]-*N*-2-thiazolylhydrocinnamamide; (thiazolyl-2)amide of *N*-acetylsarcolysine; 2-[*p*-[bis(2-chloroethyl)amino]-*N*-acetylphenylalanoyl]aminothiazole. $C_{18}H_{22}Cl_2N_4O_2S$; mol wt 429.38. C 50.35%, H 5.17%, Cl 16.51%, N 13.05%, O 7.45%, S 7.47%. Prepn: Berlin, Bronovitskaya, *J. Gen. Chem.* 30, 347 (1960).



Crystals from abs alc, mp 165.5–166.5°.
MED USE: Reported to have antineoplastic activity.

**Asbestos.** Amianthus; native calcium-magnesium silicate. *Monograph:* U. Rosat, *Asbestos, its industrial applications* (Reinhold, New York, 1959).
Fine, slender, flaxy fibers; resists fire and most solvents.
USE: Heat-resistant insulators, cements, furnace and hot pipe coverings, inert filter medium (laboratory & commercial), fireproof gloves, clothing, brake linings. *Human Toxicity:* Prolonged exposure to the dust can result in pulmonary fibrosis (asbestosis), emphysema, lung neoplasms.

**Ascaridole.** 1,4-Peroxido-*p*-menthene-2; Ascarisin. $C_{10}H_{16}O_2$; mol wt 168.23. C 71.39%, H 9.59%, O 19.02%. Constitutes 60–80% of oil of chenopodium. It is an organic peroxide. Synthesis from α-terpinene by treatment with oxygen, chlorophyll, and light: Schenck, Ziegler, *Naturwissenschaften* **1944**, 157. Purification: Beckett, Donbrow, Joliffe, *J. Pharm. Pharmacol.* 7, 55 (1955).



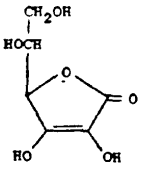
Liquid; unstable; prone to explode when heated or when treated with organic acids. $d_4^{20}$ 1.0103; $d_{20}^{20}$ 1.0113. mp +3.3°. $bp_{0.2}$ 39–40°. $[\alpha]_D^{20}$ ±0.00°. Soluble in hexane, pentane, ethanol, toluene, benzene, castor oil.
MED and VET USE: *See* Oil of Chenopodium.

**Ascarite®.** Asbestos coated with sodium hydroxide. Used for absorbing $CO_2$ in combustion analysis.

**Asclepias.** Pleurisy root; butterfly weed. Dried root of *Asclepias tuberosa* L., *Asclepiadaceae*. *Habit.* Ontario to Minnesota. *Constit.* Asclepiadin, resins, volatile oil.
MED USE: Has been used as emetic, cathartic, diaphoretic, expectorant.

**Asclepias syriaca.** Milkweed; silkweed; wild cotton. Root of *Asclepias syriaca* L. (*A. cornuti* Decaisne), *Asclepiadaceae*. *Habit.* Canada to North Carolina and Kansas. *Constit.* Asclepiadin, asclepion—a bitter principle, tannin, volatile oil.
MED USE: *See* Asclepias.

**Ascorbic Acid.** Vitamin C; L-ascorbic acid; L-xyloascorbic acid; 3-oxo-L-gulofuranolactone (enol form); L-3-ketothreohexuronic acid lactone; antiscorbutic vitamin; cevitamic acid; Cebione; Cantaxin; Cevalin; Cevatine; Cevimin; Cevitex; Cipca; Cebicure; C-Vimin; Cevitamin; Testascorbic; Allercorb; Cecon; Ce-Vi-Sol; Ascorin; Ascorteal; Cegiolan; Adenex; Ascorvit; Cevex; Lemascorb; Ciamin; Hybrin; Vitacee; Cantan; Catavin C; Celin; Cenetone; Cescorbat; Cereon; Cergona; Cetemican; Cetamid; Planavit C; Concemin; Scorbacid; Davitamon C; Proscorbin; Redoxon; Scorbu-C; Ribena; Vicelat; Vitacin; Vitacimin; Vitascorbol; Xitix; Cevitan; Laroscorbine. $C_6H_8O_6$; mol wt 176.12. C 40.91%, H 4.58%, O 54.51. Widely distributed in the plant and animal kingdom. Good sources are citrus fruits, hip berries, acerola, fresh tea leaves. Isolated from the adrenal cortex of ox and later from lemons and paprika (originally called hexuronic acid): Szent-Györgyi, *Biochem. J.* 22, 1387 (1928); Haworth, Szent-Györgyi, *Nature* 131, 24 (1933). Structure studies: Herbert *et al.*, *J. Chem. Soc.* **1933**, 1270. Synthesis: Ault *et al.*, *ibid.* 1419; Reichstein *et al.*, *Helv. Chim. Acta* 16, 561, 1019 (1933); 17, 311, 510 (1934). Crystal structure: Hvoslef, *Acta Chem. Scand.* 18, 841 (1964). *Reviews:* Haworth, Hirst, *Ergeb. Vitamin u. Hormonforsch.* 2, 160 (1939); Rosenberg, *Chemistry and Physiology of the Vitamins*, Interscience, N.Y., 1945; Seitz, *Darstellung von Vitaminpräparaten*, Hirzel, Leipzig, 1939; PB Report 1676 (1946); Burns, in Kirk-Othmer, *Encyclopedia of Chemical Technology*, 2nd ed, New York, 1963; *Ann. N.Y. Acad. Sci.* 92, 1–332 (1961). The commercially available vitamin is produced by synthesis: One process in common use starts with D-glucose which is converted to D-sorbitol by hydrogenation. The D-sorbitol is made to yield L-sorbose by oxidation with *Acetobacter suboxydans*. Then a carboxyl group is introduced at $C_1$. This is done while the L-sorbose is in the form of its diacetone derivative. The resulting diacetone-2-keto-L-gulonic acid is then heated with HCl to give ascorbic acid. Alternate route from sorbose by oxidizing with nitrogen tetroxide: Gisvold, U.S. pat. 2,702,808 (1955 to U. of Minnesota). *See also* 2-Keto-L-gulonic acid.



Crystals (usually plates, sometimes needles, monoclinic system). Pleasant, sharp, acidic taste. Stable to air when dry. In impure prepns and in many natural products the vitamin oxidizes on exposure to air and light. d 1.65. mp 190–192° (some dec); $[\alpha]_D^{25}$ +20.5° to +21.5° (c = 1); $[\alpha]_D^{23}$ +48° (c = 1 in methanol). pH = 3 (5 mg/ml); pH = 2 (50 mg/ml); $pK_1$ = 4.17; $pK_2$ = 11.57. Absorption max 245 mμ (acid soln); 265 mμ (neutral soln). Redox potential of first stage at pH 5.0 is $\epsilon'_0$ = +0.127 v. One gram dissolves in about 3 ml water, 30 ml alc, 50 ml absolute alc, 100 ml glycerol U.S.P., 20 ml propylene glycol. Solubility in hot water: 80.0% at 100°; 40.0% at 45°. Insoluble in ether, chloroform, benzene, petr ether, oils, fats, fat solvents. Possesses relatively strong reducing power, decolorizes many dyes. Aq solns are rapidly oxidized by air. The reaction is accelerated by alkalies, iron, copper. Forms stable metal salts, *see* Sodium Ascorbate. *Pharmaceutical Incompatibilities:* Vitamin C should not be formulated with sodium salicylate, sodium nitrite, theobromine sodium salicylate, methenamine. *Ref:* C.A. 46, 7707.
Calcium hypophosphite, $(C_6H_7O_6)CaH_2PO_2$, *asphocalcium, Calscorbat.*
USE: Aside from its use as a vitamin, ascorbic acid or some derivatives, such as ascorbyl palmitate, are employed as antioxidants in foodstuffs, to prevent rancidity, to prevent the browning of cut apples and other fruit, in meat curing.
MED USE: Vitamin C deficiency. *Dose:* Oral 100 mg to 1 g.
VET USE: Has been reported favorable in certain cases of sterility of cattle and scurvy-like signs in dogs. *Dose* (used clinically and said to be effective where ascorbic acid deficiency exists): horses: 2–4 g s.c. repeated as needed; bulls: 1–2 g/450 kg body weight s.c. at 3- to 4-day intervals for 5 or 6 weeks; cattle: 1–2 g i.v. plus 2 g s.c. just before breeding; dogs: 25–75 mg s.c. or orally.
*Note:* One unit (U.S.P. or international) is the vitamin C activity of 0.05 mg of the U.S.P. ascorbic acid reference standard.