

12. Phelps DL, *et al.* D-Penicillamine for preventing retinopathy of prematurity in preterm infants. Available in The Cochrane Database of Systematic Reviews; Issue 1. Chichester: John Wiley; 2001 (accessed 09/01/06).
13. Reynolds JD, *et al.* Lack of efficacy of light reduction in preventing retinopathy of prematurity. *N Engl J Med* 1998; **338**: 1572-6.
14. Phelps DL, Watts JL. Early light reduction for preventing retinopathy of prematurity in very low birth weight infants. Available in The Cochrane Database of Systematic Reviews; Issue 1. Chichester: John Wiley; 2001 (accessed 09/01/06).

Tardive dyskinesia. Reviews^{1,2} on the use of vitamin E in the management of antipsychotic-induced tardive dyskinesia (see under Extrapyramidal Disorders, p.971) concluded that evidence of benefit has generally come from small studies with methodological problems. One review¹ concluded that whereas vitamin E may protect against deterioration of tardive dyskinesia there was no evidence that it produced symptomatic improvement. It was suggested² that vitamin E therapy may be most beneficial in those patients with tardive dyskinesia of less than 5-years duration. Some recommend vitamin E as a treatment option in patients with newly diagnosed disease.³ Further large-scale studies are required to establish its place in treatment.

- Soares KVS, McGrath JJ. Vitamin E for neuroleptic-induced tardive dyskinesia. Available in The Cochrane Database of Systematic Reviews; Issue 4. Chichester: John Wiley; 2001 (accessed 09/01/06).
- Boomershine KH, *et al.* Vitamin E in the treatment of tardive dyskinesia. *Ann Pharmacother* 1999; **33**: 1195-1202.
- Pham DQ, Plakogiannis R. Vitamin E supplementation in Alzheimer's disease. Parkinson's disease, tardive dyskinesia, and cataract. Part 2. *Ann Pharmacother* 2005; **39**: 2065-72.

Preparations

BP 2008: Alpha Tocopheryl Succinate Tablets;
USNF 26: Tocopherols Excipient;
USP 31: Vitamin E Capsules; Vitamin E Preparation.

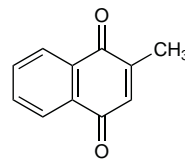
Proprietary Preparations (details are given in Part 3)

Arg.: Antioxidante Natural; E-devit Protectora; Ephyнал; Etec; Evion; Risordant; Senexon Ef; Tonovital E; **Austral.:** Bioglan Micelle E; Bioglan Natural E; Bioglan Water Soluble E; Chew-E; Dal-E; Macro Ef; Mega Ef; Vita Ef; **Austria:** Aviglen; Ephyнал; Etocomed; Evitol; Tocovenos; **Belg.:** Docvittee; Ephyнал; Optovit E; **Braz.:** E Plus; E Radicaps; E-Mil†; E-Tabs; Epherof†; Ema-ma; Ephyнал; Fonto-Vit E; Fort E; Teutovit-E; Vita-E; Vitizin E; Zirvit E; **Canad.:** Aquasol E; Kyoic Formula 106; Novo E; Nutrol E; One A Day Cholesterol Health†; Organex†; **Chile:** Crevet-E; Egogyn; Etec; **Cz.:** Biogel-Ido Vitamin Ef; Erevit; Evit†; Sant-E-Gal†; **Fin.:** Bio-E-Vitamin; Equiday; Esol†; Ido-E; Tokovitan; Vita-E†; **Fr.:** Dermorelle; Ephyнал†; Toco; Tocolon; Tocopa; **Ger.:** Antioxidans E; Biopto-E; Biosan E; Detulin; E-Mulsin†; E-Tonil; E-Vicotrat; Elex E; Embial†; Ephyнал†; Eplonast; Eusovit; Evion; Flexal Vitamin E; Malton E; Mowivit; Optovit; Puncto E; Sanaviton S; Spondyvit; Tocorell; Tocovital; Togasan; Uno-Vit; Vibolex E; Vita-E; Vitagutt Vitamin Ef; Vitazell E; **Gr.:** E-Vicotrat; Ephyнал†; Eviol; **Hong Kong:** Clinic†; Keri Vit E; Myra 300-E; Natopherol; Tophar-E; **India:** Ecapi; EEE; Evion; Evitam; Greenpearl†; **Indon.:** Bio-E; Dalifarol; Edoti; Evion; Evipon; Lanturo†; Natopherol; Natur-E; Naturo†; Prima-E; Proxidan; Santa-E; Tocopherine; Vinpo-E; Vitaferol; **Irl.:** Ephyнал†; **Israel:** Ephyнал†; Evitex; Evitol; **Ital.:** E-Vitum; Ephyнал; Evasen Crema; Evion; Natovit; Rigentex; Sursum; **Malaysia:** Citrex Vitamin E; E Vita†; Fairy ADE; Juvela†; Natopherol; Toco-E; **Mex.:** Bacferol†; E-Fertoc; Egrin; EPH; Egerminol†; Isopeol†; Revitare E; Vit-E-Far; Vitale†; **Norw.:** Bio-E-Vitamin; Ido-E; Nycoplus E; **NZ:** Micelle E; **Philipp.:** Enat; Ernervon-E; Evion; Myra; Zyme E; **Pol.:** Dermovit E; Tokovit E; Vitole E; **Port.:** Ephyнал; Ve; **Rus.:** Evitol (Эвитол); **S.Afr.:** Ephyнал; Vitaforce E; **Singapore:** Myra 300-E; Natopherol; Naturee; **Spain:** Auxina E; Ephyнал; **Sweden:** E-vidon; E-vimin; Ido-E; **Switz.:** ecobiosan; Ephyнал; Evit; Lipo Ef; Optovit; **Thai.:** Bio-E; E-Drops; **Turk.:** Eforol; Ephyнал; Evicap; Evigen; Evion; Grandpherol; Natural E; Natural Wealth; **UK:** Ephyнал; Prairie Gold; Vita-E; **USA:** Aqua-E; Aquasol E; Aquavit-E; E-Gems; Nutr-E-Sol; Vita-Plus E; Vitex; **Venez.:** Best; Ecogyn†; Egogyn; Ephyнал†; Epol; Missecap; Nat-E; Vit-E-Nat; Vit-E-Var; Vitae; Viteral.

Multi-ingredient: **Arg.:** A-Vitel E; Abanta; Acilac; Atomoderma A-E; Brunavera; Cardiax; Cellskinlab C + E; Centella Asiatica Diates; Centella Asiatica Vital; Centellase de Centella Queen; Crema De Ordene; Culuflex H; Dermanova; E-devit; Epitheliale A-Derma; Estri-Atlas; Eurocolor Bronceador; Factor Vit AE; Lipofundin MCT/LCT-E; Liposomas; Nectar G; Oxidermos; Redudiet; SCV 300; Sigmafen; Snella; Snella Vag; Sojasterol†; Solenil Post Solar; Vansame; VNS 45; **Austral.:** Althaea Complex; Antioxidant Forte Tablets; Antioxidant Tablets; Arthriforte; Beta A-C; Bioglan Bioage Peripheral; Bioglan Micelle A plus E; Bioglan Primrose-E; Curash Baby Wipes; Curash Babycare; ER Cream†; Eye Health Herbal Plus Formula 4; Ginkgo Complex†; Hair and Skin Formula†; Lifechange Circulation Aid†; Lifesystem Herbal Plus Formula 5 Eye Relief†; Lifesystem Herbal Plus Formula 8 Echinacea†; Macro Natural Vitamin E Cream; ML 20†; Sambucus Complex†; Serenoa Complex†; **Austria:** A-E-Mulsin; Arcavit A/E; Coldistop; Droxaryl; Gerogelat; Mamellin; Pasuma-Dragees; Regenerin†; Rovigon; Ulcurilen; Vasovitol; **Belg.:** Rovigon; **Braz.:** Adeforte; Licovit; **Canad.:** Bi-onagre plus E; Lubiderm Advanced Moisture†; PML Crono†; **Chile:** Dermaglos; Dermaglos Plus†; Rovigon; **Cz.:** A-E-Mulsin†; Coldastop; Dr Theiss Beinwell Salbe†; Fluocanil Bi-Fluore Vitamin Ef; Lipovitan†; Vitazulen†; **Fin.:** Aesol; Cellaviet; **Fr.:** Alpha 5 DS†; Bakol; BiaZinc†; Bio-Selenium; Cicatryl; Cirkan a la Prednaciolone; Difirarel E; Ophthalid†; Phytolongbronzee; Phytosolaire; Reti-Nat; Rovigon†; Seborheane; Tonimer; Topialyse; Topialyse Fluide; Topialyse Plus; **Ger.:** A + E Thilo†; A-E-Mulsin†; analob-loges; Coldastop; Dyne†; Hwekzemz novo N; Lipavid†; Lipovitan†; Magnesium Tonil mit Vitamin E; Magnesium-Plus-Hever†; Mapurit; NeyNormin N (Revitorgan-Dilutionen N Nr 65)†; NeyPulpin N (Revitorgan-Dilutionen N Nr 10)†; NeyTumornin N (Revitorgan-Dilutionen N Nr 66)†; Protector; Reme-derm; Rovigon G†; RubieMag + Ef; Salus Herz-Schutz-Kapseln†; Saluscor Herz-Schutz; Tears Again; Ulcurilen N†; Unguentacid; Ureata S†; Vaso-E-Bion; **Gr.:** Avegon; Eviol-A; **Hong Kong:** Aderma Epitheliale†; Apaisac; Basikol; Difirarel E; Doctor's Choice Omega 3; DS Emulsion; E-Prime†; Eye Q; Pileifit; Pregnacare; Sanjukei Panax Ginseng; Welsan Lipocream; **Hung.:** Alkesebor; Coldastop; Difirarel E; Magnevit†; **India:** Cadvin; Elovera; Elovera-SPF; Rovigon†; Sclerobion; Seeking Plus†; Sofderm; Vitexid; **Indon.:** Fundamin-E; Garlic-Plus; Hepamax; Jointfit; Juvelon-C; Lanakeloid-E; Lapibi-on; Legresin; Lesifit; Lycco; Nervitone E; Remasal; RG-Q; Tocobion; Trim-mate-E; Velostin; Voldilex; **Ital.:** Angstrom Viso; Apogeo; Babysterin; Capil-Cellastere; Coqun; Derman-Oil; Dermana Crema; Dermana Pasta; Ecamannan; Efage; Emortotrofine; Ener-Ef; Eurogel; Forticrin; Granoleina†; Ictom 3†; Midium; Migel; Mirtilene; Pasta Dicofarm; Provitamin A-E; Retinovit; Rovigon; Royal E; Rutisan CE†; Skarflex; Tannidin Plus; Tocalfa; Ultravision; Vasopt; Vit Eparin; **Malaysia:** Balance Elastin Ef; Boots Antenatal Massage Cream†; Elovera; Natopherol Dermal-Day†; Prim E; Salonpas; Tocovid;

The symbol † denotes a preparation no longer actively marketed

Mex.: Avevix; Cardioprotect; Cetop; Emolin Neo; Hipoglos Gremoso; Nutrem; Panaline†; Peridentyl; **Neth.:** Dagravit A-E Fort†; **NZ:** Chap Stick; **Philipp.:** Elovera; Hinuron-E; Neuroforte-E; Nuron-E; Pynocare 40 Actisome; Remeiderm; Rovigon; **Pol.:** Capvit A + E; Dehalid†; Lecytyna E; MBE; Tokovit A + E; **Port.:** Alkagin; Antiestrias; Creme Laser Hidrante; Esclerobion; Nutradipon; Rilastil Dermo Solar; Rovigon; Synchronrose; Synchro-vit; Zolium†; **Singapore:** Destin Creamy†; E-Prime; Erase; **Spain:** Auxina A + E; Vitaber A E; Wobenzimil†; **Switz.:** Alphastria; Goldstop; Leni-derm†; Oravil; Rovigon; Visaline; **Thai.:** Men Hormone; Sidul; **UK:** Octacosanol; Se-Power; **USA:** Aloe Grande; Diaper Guard; Lactinol-E; Laz-ercreme; Lobana Derm-Aide; Lobana Peri-Garde; Phicoin; Tucks; Wound Cleanser; Ze Caps†; **Venez.:** Ademina; Kalsis.



Vitamin K Substances

Vitamina K.

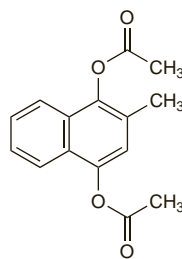
The term vitamin K is used for a range of naphthoquinone compounds that includes: acetomenaphthone, menadiol, menadione, menatetrenone, and phytomenadione.

Acetomenaphthone (BAN)

Acetomenadione; Acetomenaftona; Acetomenaph.; Menadiol Diacetate; Vitamin K₄ Diacetate. 2-Methyl-1,4-naphthylene diacetate.

C₁₅H₁₄O₄ = 258.3.

CAS — 573-20-6.



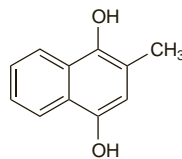
Pharmacopoeias. In Chin.

Menadiol Sodium Phosphate (BANM)

Menadiol, fosfato sódico de; Menadiol Sodium Diphosphate; Menadiolium Sulfide; Vitamin K₄ Sodium Phosphate. 2-Methylnaphthalene-1,4-diol bis(disodium phosphate) hexahydrate.

C₁₁H₈Na₄O₈P₂·6H₂O = 530.2.

CAS — 481-85-6 (menadiol); 131-13-5 (anhydrous menadiol sodium phosphate); 6700-42-1 (menadiol sodium phosphate hexahydrate); 84-98-0 (menadiol diphosphate).



(menadiol)

NOTE. Menadiol Potassium Sulfate (Potassium Menathiosulfate) is BAN and Menadiol Sodium Sulfate is rINN.

Pharmacopoeias. In Br. and US.

BP 2008 (Menadiol Sodium Phosphate). A white to pink, hygroscopic, crystalline powder with a characteristic odour. Very soluble in water; practically insoluble in alcohol.

USP 31 (Menadiol Sodium Diphosphate). A white to pink, hygroscopic, powder having a characteristic odour. Very soluble in water; insoluble in alcohol. Its solutions in water are neutral or slightly alkaline to litmus having a pH of about 8. Store in airtight containers at a temperature not exceeding 8°. Protect from light.

Menadione (BAN)

Menadion; Menadiona; Menadionas; Ménadione; Menadionis; Menadionium; Menaph.; Menaphthene; Menaphthone; Methylnaphthochinonum; Vitamin K₃. 2-Methyl-1,4-naphthoquinone.

C₁₁H₈O₂ = 172.2.

CAS — 58-27-5.

ATC — B02BA02.

ATC Vet — QB02BA02.

Pharmacopoeias. In Eur. (see p.vii) and US.

Ph. Eur. 6.2 (Menadione). A pale yellow crystalline powder. It is unstable in light. Practically insoluble in water; sparingly soluble in alcohol and in methyl alcohol; freely soluble in toluene. Protect from light.

USP 31 (Menadione). A bright yellow, practically odourless, crystalline powder. It is affected by sunlight. Practically insoluble in water; soluble 1 in 60 of alcohol, 1 in 50 of vegetable oils, and 1 in 10 of benzene; sparingly soluble in chloroform. Store at a temperature of 25°, excursions permitted between 15° and 30°. Protect from light.

Handling. Menadione powder is irritating to the respiratory tract and to the skin. The alcoholic solution has vesicant properties.

Menadione Sodium Bisulfite (rINN)

Bisulfito sódico de menadiona; Kavitanum; Menadiol Sodium Bisulfite; Ménadione, Bisulfite Sodique de; Menadione Sodium Bisulphite (BANM); Menadionis Natrii Bisulfis; Menadioninatriumbisulfitti; Menadionnatriumbisulfitt; Menadionum wodorosiarzinyn sodowy; Menaph. Sod. Bisulphite; Menaphthone Sodium Bisulphite; Methylnaphthochinonum natrium Bisulfurosum; Vikasolum; Vitamin K₃ Sodium Bisulphite. Sodium 1,2,3,4-tetrahydro-2-methyl-1,4-dioxonaphthalene-2-sulphonate trihydrate.

Менадиона Натрия Бисульфит

C₁₁H₈O₂NaHSO₃·3H₂O = 330.3.

CAS — 130-37-0 (anhydrous menadione sodium bisulfite); 6147-37-1 (menadione sodium bisulfite trihydrate).

Pharmacopoeias. In Chin. and Pol.

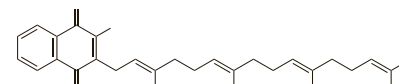
Menatetrenone (rINN)

E-3100; Ea-0167; Menaquinone-4; Menaquinone 4; Menaquinone K4; Menatetren; Menatetrenone; Ménatétrénone; Menatetretonum; MK-4; Vitamin K₂₍₂₀₎; Vitamin MK 4. 2-Methyl-3-(3,7,11,15-tetramethyl-2,6,10,14-hexadeca-tetraenyl)-1,4-naphthoquinone.

Менатетрэнон

C₃₁H₄₀O₂ = 444.6.

CAS — 863-61-6.



Pharmacopoeias. In Jpn.

Phytomenadione (BAN, rINN)

Fitomenadion; Fitomenadiona; Fitomenadionas; Fytomenadion; Fytomenadionis; Methylphytylnaphthochinonum; Phylloquinone; Phytomenad.; Phytoméadione; Phytomenadionum; Phytionadione; Vitamin K₁. 2-Methyl-3-[3,7,11,15-tetramethylhexadec-2-enyl] naphthalene-1,4-dione.

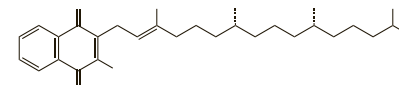
Фитоменадион

C₃₁H₄₆O₂ = 450.7.

CAS — 84-80-0.

ATC — B02BA01.

ATC Vet — QB02BA01.



Pharmacopoeias. In Chin., Eur. (see p.vii), Int., Jpn, US, and Viet.

Ph. Eur. 6.2 (Phytomenadione). A mixture of the *trans* (*E*) and *cis* (*Z*) isomers. It contains not less than 75% of *trans*-phytomenadione, and also allows not more than 4% of *trans*-epoxyphytomenadione.

A clear, intense yellow, viscous, oily liquid, which decomposes on exposure to actinic light. Practically insoluble in water; sparingly soluble in alcohol; miscible with fatty oils. Protect from light.

USP 31 (Phytomenadione). A mixture of the *E* and *Z* isomers. It contains not more than 21% of the *Z* isomer. A clear, yellow to