

hours.¹ There have also been reports of umbilical granulomas resulting from contamination of umbilical stumps with talcum powder used for skin care.²

1. Paireaudeau PW, et al. Inhalation of baby powder: an unappreciated hazard. *BMJ* 1991; **302**: 1200-1.
2. Sparrow SA, Hallam LA. Talc granulomas. *BMJ* 1991; **303**: 58.

Uses and Administration

Purified talc is used in massage and as a dusting powder to allay irritation and prevent chafing. It is usually mixed with starch, to increase absorption of moisture, and zinc oxide. Talc used in dusting powders should be sterilised. Purified talc is used as a lubricant and diluent in making tablets and capsules and to clarify liquids.

Sterile purified talc is also used as a sclerosant after drainage of malignant pleural effusion and for recurrent spontaneous pneumothorax. It is administered into the pleural cavity as a slurry or by aerosol (insufflation). Doses of about 5 g may be used for pleural effusion and 2 g for pneumothorax.

Pleural effusions. Talc is used as a sclerosant to achieve pleurodesis in the management of benign and malignant pleural effusions (p.659) and recurrent spontaneous pneumothorax.¹⁻⁴ It is generally given into the pleural space as a slurry via intercostal tube, or by insufflation (talc poudrage) at thoracoscopy. Most reports have used a dose of 2 to 5 g, but doses have ranged from 1 to 10 g. A study⁵ of talc pleurodesis in patients with malignant pleural effusion found both slurry and insufflation to be equally effective. The most common adverse effects associated with this use of talc are pain and fever. Other reported effects have included local infection and empyema, cardiovascular complications, and respiratory failure (see also Effects on the Lungs, above).

1. Kennedy L, Sahn SA. Talc pleurodesis for the treatment of pneumothorax and pleural effusion. *Chest* 1994; **106**: 1215-22.
2. de Campos JRM, et al. Thoracoscopy talc poudrage: a 15 year experience. *Chest* 2001; **119**: 801-6.
3. Antunes G, et al. British Thoracic Society. BTS guidelines for the management of malignant pleural effusions. *Thorax* 2003; **58** (suppl 2): ii29-ii38. Also available at: <http://www.brit-thoracic.org.uk/Portals/0/Clinical%20Information/Pleural%20Disease/Guidelines/PleuralDiseaseMalignantPE.pdf> (accessed 28/07/08)
4. Henry M, et al. British Thoracic Society. BTS guidelines for the management of spontaneous pneumothorax. *Thorax* 2003; **58** (suppl 2): ii39-ii52. Also available at: <http://www.brit-thoracic.org.uk/Portals/0/Clinical%20Information/Pleural%20Disease/Guidelines/PleuralDiseaseSpontaneous.pdf> (accessed 28/07/08)
5. Dresler CM, et al. Phase III intergroup study of talc poudrage vs talc slurry sclerosis for malignant pleural effusion. *Chest* 2005; **127**: 909-15.

Preparations

BP 2008: Talc Dusting Powder.

Proprietary Preparations (details are given in Part 3)

USA: Sclerosol.

Multi-ingredient: **Arg.:** Dr Selby; **Austral.:** ZSC; **Austria:** Cutimix; Herposic; Prunimix; Rombay; **Belg.:** Aloplastine; **Braz.:** Pasta d'Agua; Pomaderme; Talco Alivio; **Chile:** Hansaplast Footcare; **Cz.:** Cutimix; Prunimix; **Fr.:** Aloplastine; Eryange; Poudre du Marcheur; **Indon.:** Mlinos; Yanthi Baby & Bath Powder; **Israel:** Pedisol; **Malaysia:** Rowarolan; **Mex.:** Hipoglos; **NZ:** Grans Remedy; Lamisil Odor Eze; **Philipp.:** Johnson's Baby Double Protection Powder; **Pol.:** Pedipur; **Port.:** Cuidaderma; **Spain:** Amniolina; Ictiomem; Pomada Infantil Vera; **Switz.:** Tanno-Hermal; **Turk.:** Cinkos; **USA:** Columbia Antiseptic Powder; **Venez.:** Hipoglos con Hidrocortisona; Hipoglosj.

Tars and Tar Oils

Brea y aceites de brea.

Birch Tar Oil

Aceite de abedul; Aceite de brea de abedul; Birkenteer; Goudron de Bouleau; Oleum Betulae Albae; Oleum Betulae Empyreumaticum; Oleum Betulae Pyroligneum; Oleum Rusci; Pix Betulae; Pyrololeum Betulae.

Масло Берестового Дёгтя

Description. Birch tar oil is obtained by the destructive distillation of the wood and bark of the silver birch, *Betula verrucosa* (*B. pendula*; *B. alba*), and the birch, *B. pubescens* (Betulaceae); the distillate is allowed to stand and the oily upper layer separated from the residual tar.

Cade Oil

Alquitrán de Enebro; Ardç Katrani; Brea de enebro; Goudron de Cade; Juniper Tar; Juniper Tar Oil; Kad Yağı; Kadeöl; Oleum Cadinum; Oleum Juniperi Empyreumaticum; Pix Cadi; Pix Juniperi; Pix Oxycedri; Pyrololeum Juniperi; Pyrololeum Oxycedri; Wacholder-teer.

Можжевеловое Масло

Description. Cade oil contains guaiaicol, ethylguaiaicol, creosol, and cadinene.

Pharmacopoeias. In US.

USP 31 (Juniper Tar). The empyreumatic volatile oil obtained from the woody portions of *Juniperus oxycedrus* (Pinaceae). It is a dark brown, clear, thick liquid with a tarry odour. Very slightly soluble in water; soluble 1 in 9 of alcohol; soluble 1 in 3 of ether leaving only a slight flocculent residue; partially soluble in petroleum spirit; miscible with amyl alcohol, with chloroform, and with glacial acetic acid. Store in airtight containers at a temperature not exceeding 40°. Protect from light.

Coal Tar

Alcatrão Mineral; Alquitrán de hulla; Brea de hulla; Crude Coal Tar; Goudron de Houille; Kamenouhelný dehet; Katran; Oleum Lithanthracis; Pix Carbon; Pix Carbonis; Pix Lithanthracis; Pix Mineralis; Pyrololeum Lithanthracis; Steinkohlenteer.

Каменноугольная Смола

Description. Prepared coal tar is commercial coal tar heated at 50° for 1 hour.

Alcoholic solutions of coal tar or prepared coal tar prepared with the aid of polysorbate have been referred to as Liquor Picis Carbonis and Liquor Carbonis Detergens.

Pharmacopoeias. In Br, Fr, Int., and US.

BP 2008 (Coal Tar). A product obtained by the destructive distillation of bituminous coal at a temperature of about 1000°. A nearly black, viscous liquid with a strong characteristic penetrating odour. On exposure to air it gradually becomes more viscous. It burns in air with a luminous sooty flame. Slightly soluble in water; partly soluble in absolute alcohol, in chloroform, in ether, and in volatile oils. A saturated solution is alkaline to litmus.

USP 31 (Coal Tar). The tar obtained by the destructive distillation of bituminous coal at temperatures in the range of 900° to 1100°. It may be processed further either by extraction with alcohol and suitable dispersing agents and maceration times or by fractional distillation with or without the use of suitable organic solvents.

A nearly black, viscous liquid with a characteristic naphthalene-like odour. Slightly soluble in water to which it imparts an alkaline reaction; partially soluble in alcohol, in acetone, in carbon disulfide, in chloroform, in ether, in methyl alcohol, and in petroleum spirit; more soluble in benzene; almost completely soluble in nitrobenzene. Store in airtight containers.

Tar

Alquitrán vegetal; Brea; Brea de pino; Brea vegetal; Goudron Végétal; Nadelholzteer; Pina Tar; Pix Abietinarum; Pix Liquida; Pix Pini; Pyrololeum Pini; Wood Tar.

Древесная Смола; Древесный Дёготь

Pharmacopoeias. In Br.

BP 2008 (Tar). A bituminous liquid obtained from the wood of various trees of the family Pinaceae by destructive distillation. It is known in commerce as Stockholm Tar. A dark brown or nearly black semi-liquid with a characteristic empyreumatic odour; it is heavier than water. Soluble in alcohol (90%), in chloroform, in ether, and in fixed and volatile oils. The aqueous liquid obtained by shaking 1 g with 20 mL of water for 5 minutes is acidic to litmus paper.

Storage. When stored for some time tar separates into a layer which is granular in character due to minute crystallisation of catechol, resin acids, etc. and a surface layer of a syrupy consistency.

Adverse Effects and Precautions

Tars and tar oils may cause irritation and acne-like eruptions of the skin and should not be applied to inflamed or broken skin, mucosa, or the anogenital area. They should be used with caution on the face and skin flexures. Hypersensitivity reactions are rare but wood tars are more likely to cause sensitisation than coal tar. However, unlike wood tars, coal tar has a photosensitising action. Preparations of refined tar products appear to be less likely than crude tars to stain the skin, hair, and clothing.

Depending on their composition the systemic effects of tars and tar oils are similar to those for phenol (see p.1656).

Carcinogenicity. Coal tar and coal tar distillates contain a number of known and potential carcinogens including benzene, naphthalene, and other polycyclic aromatic hydrocarbons.¹ Studies of occupational exposure (for example, during coke production, coal gasification, and aluminium production) have found systemic absorption of significant amounts of polycyclic aromatic hydrocarbons,² and increases in the risks of developing a range of cancers.^{1,2} Systemic absorption of polycyclic aromatic hydrocarbons has also been measured after the application of coal tar preparations used in the treatment of skin conditions.² However, although an increased risk of skin carcinoma was found³ in 59 patients with psoriasis who had had very high exposures to tar

and/or UV radiation, other cohort studies^{4,6} found no increase in the risk of developing cancers from coal tar, even after long-term use.

1. National Toxicology Program. Coal tars and coal tar pitches. *Rep Carcinog* 2002; **10**: 68-70.
2. van Schooten F-J, Godschalk R. Coal tar therapy: is it carcinogenic? *Drug Safety* 1996; **15**: 374-7.
3. Stern RS, et al. Skin carcinoma in patients with psoriasis treated with topical tar and artificial ultraviolet radiation. *Lancet* 1980; **i**: 732-5.
4. Pittelkow MR, et al. Skin cancer in patients with psoriasis treated with coal tar. *Arch Dermatol* 1981; **117**: 465-8.
5. Jones SK, et al. Further evidence of the safety of tar in the management of psoriasis. *Br J Dermatol* 1985; **113**: 97-101.
6. Stern RS, Laird N. The carcinogenic risk of treatments for severe psoriasis. *Cancer* 1994; **73**: 2759-64.

Extemporaneous preparation. Concern about the possible carcinogenic potential of coal tar (see above) led the Health and Safety Executive in the UK to recommend that gloves for chemical protection, as opposed to disposable surgeon's gloves, should be worn during the extemporaneous preparation of formulations containing coal tar.¹

1. Anonymous. Chemical protection gloves recommended for coal tar ointments. *Pharm J* 1997; **259**: 757.

Uses and Administration

Tars and tar oils can reduce the thickness of the epidermis. They are antipruritic and may be weakly antiseptic. They are used topically in eczema (p.1579), psoriasis (below), dandruff, seborrhoeic dermatitis (p.1584), and other skin disorders. Coal tar preparations have largely replaced the use of wood tars. Ultraviolet (UVB) light increases the efficacy of coal tar in the treatment of psoriasis.

Some wood tars, including creosote (p.1555) have been used in expectorant preparations.

Nonprescription use. After a review of products for safety and efficacy the FDA ruled that cade oil or tar should not be used in nonprescription shampoos¹ and that tar should no longer be included in nonprescription expectorants.²

1. Anonymous. Nonprescription drug review gains momentum. *WHO Drug Inf* 1991; **5**: 62.
2. Anonymous. FDA announces standards for nonprescription sleep-aid products and expectorants. *Clin Pharm* 1989; **8**: 388.

Psoriasis. Coal tar has long been employed in the treatment of psoriasis (p.1583), and used alone or with dithranol and/or ultraviolet light it continues to be a first-line option, although its use is declining. It is particularly suited to the treatment of stable chronic plaque psoriasis. Its mode of action is unknown but it is considered to have antiproliferative and anti-inflammatory activity, producing a reduction in the thickness of viable epidermis. Crude tar preparations are rather messy and unpleasant; refined products may be more aesthetically acceptable and less likely to stain skin, hair, and clothing although some consider them to be less effective.

Treatments usually start with concentrations equivalent to 0.5 to 1% of crude coal tar with the concentration being increased as necessary every few days up to a maximum of 10%. The higher strength preparations may be required for the management of thicker patches of psoriasis but the British Association of Dermatologists considers that coal tar preparations of between 1 and 5% in white or yellow soft paraffin are as effective as higher concentrations, and that the use of higher concentrations, which has been traditionally advocated, has no evidence-based foundation and is best avoided, especially as it restricts outpatient use.

Coal tar may not clear psoriasis as fast as other agents but extended periods of remission can be obtained with its use. The Goeckerman regimen utilises the enhanced efficacy obtained when coal tar is applied before exposure to ultraviolet (UVB) light. The mechanism for this effect is not known but it does not appear to be due to the photosensitising action of coal tar. In most regimens the coal tar is applied 2 hours before exposure to UVB light. In Ingram's regimen and its modifications the use of coal tar and UVB light is followed by topical treatment with dithranol. It has been suggested that the irritant effects of dithranol treatment can be reduced without loss of efficacy if coal tar is also used.

References

1. Rotstein H, Baker C. The treatment of psoriasis. *Med J Aust* 1990; **152**: 153-64.
2. Arnold WP. Tar. *Clin Dermatol* 1997; **15**: 739-44.
3. Thami GP, Sarkar R. Coal tar: past, present and future. *Clin Exp Dermatol* 2002; **27**: 99-103.
4. British Association of Dermatologists. Psoriasis guideline 2006. Available at: [http://www.bad.org.uk/healthcare/guidelines/psoriasis_guideline_\(Final_update\)_280906.pdf](http://www.bad.org.uk/healthcare/guidelines/psoriasis_guideline_(Final_update)_280906.pdf) (accessed 27/09/07)

Preparations

BP 2008: Calamine and Coal Tar Ointment; Coal Tar and Salicylic Acid Ointment; Coal Tar and Zinc Ointment; Coal Tar Paste; Coal Tar Solution; Strong Coal Tar Solution; Zinc and Coal Tar Paste.

USP 31: Coal Tar Ointment; Coal Tar Topical Solution; Compound Resorcinol Ointment.

Proprietary Preparations (details are given in Part 3)

Arg.: Alcoderm; Alcontar; Fijaicid; Ingeshamp; Ionil-T Plus; Soriacur; Sorial; Supertar; Sutrico Tar; Targel; **Austral.:** Alphosyl; Exorex; Ionil-T Plus; Linotar; Neurogena T/Gel; Pinetarsol; Polytar Plus; Psorigel;

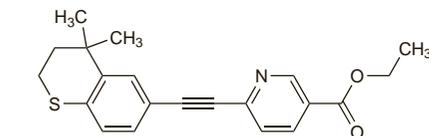
Austria: Exorex; **Braz:** Ionil-T Plus†; Tarflex; Theratarg; **Canada:** Balnetar; Doak-Oil; Estarg; Mazon Medicated Soap; Neutrogena T/Gel; Neutrogena T/Gel Therapeutic; Pentrax; Spectro Tar†; Targel; Tarsa-Tar; **Chile:** DHS Tar Gel; Neutrogena Shampoo Neutar; Spongell†; Tarmed; Tigel IRM; **Cz:** Delatar; Teer-Linolol-Fett N†; **Denm:** Basotar†; **Fr:** Caditar; **Ger:** Basiter†; Berniter; Hoepkin Bad N†; Lorinden Teersalbe; Tarmed; Teer-Linolol-Fett; **Gr:** Exorex; Ionil†; Tarmed; **Hong Kong:** Pinetarol; Zetar; **Irl:** Alphosyl†; Exorex; Pentrax; Psoriderm; **Israel:** Alphosyl 2 in 1†; Denorex†; T/Gel; **Ital:** Konor; Shampoo SDE Tar†; **Malaysia:** Pin-Xol; Pinetarol; **Mex:** Ionil-T Plus; Shampoo Tarsa-Tar†; Tarmed; **Neth:** Exorex; **Norw:** Soraderm†; **NZ:** Pinetarol; Spongell†; **Pol:** Delatar; Freederm Tar†; Polytar; **Port:** Neutar; Tarmed; **Rus:** Freederm Tar (Фридерм Деготь); **S.Afr:** Alphosyl; Denorex; Exarex†; Linotar; **Singapore:** Pinetarol; Spongell; Tarmed; Alphosyl; Piroxol; Psoriasisin; Tar Isdin Champu; Tarmed; Tejel; **UK:** Alphosyl 2 in 1†; Carbo-Dome; Clinitar; Exorex; Pentrax; Pinetarol; Psoriderm; T/Gel; **USA:** Balnetar; Creamy Tar; DHS Tar; Estarg†; Fototar; Ionil-T Plus; MG217 Medicated; Neutrogena T/Gel; Oxipor VHC; PC-Tar; Pentrax; Polytar; Spongell†; Taraphilic; Tegrin; Tera-Gel; Zetar; **Venez:** Alma-Tar.

Multi-ingredient: **Arg:** Acnetrol; Adop-Tar†; Aroseb; Champuacid; Cicatrol; Confor-Tar†; Cremsor N; Domitsona†; Eurocoal; Farm-X; Hyaluron; Ingemet; Ionil-T; Laurinol Plus; Medic†; Mencogrin; Mencogrin AP; Oilalfo; Sequals G; Sorsis; Sorsis Beta; **Austral:** Alphosyl; Eczema Cream; Egopsoryl TA; ER Cream†; Fongitar; Hamilton Pine Tar with Menthol; Ionil-T; Neutrogena T/Salt†; Pinetarol; Polytar; Psor-Assist; Sebitar; Tarband†; **Austria:** Alphosyl; Alpicort; Locacorten Tar; **Belg:** Locacortene Tar†; **Braz:** Hebrin; Ionil-T; Polytar; Xarope Sao Joao†; **Canada:** Boil Ease†; Dan-Tar Plus; Denorex Medicated; Mazon Medicated Cream; Mazon Medicated Shampoo; Medi-Dan; Multi-Tar Plus; Oxipor; P & S Plus; Polytar; Polytar AF; Sebcur†; Sebuto†; S; Liminet; Spectro Tar†; Sterex Sterex Plus; Tardan; Targel SA; X-Seb T; X-Seb T Plus; X-Tar; **Chile:** Denorex Herbal†; Ionil-T; Tarytar†; **Cz:** Locacorten Tar†; Polytar; Polytar AF; Suspensio Visnevski cum Pice Liquida Herbacos; **Fr:** Alphosyl†; Cystel Shampooing Antiseborrheique†; Epiphane†; Item Alphacade; Laccoderme a l'huile de cade; Node DS; Node K; Node P; Novophane; Novophane S; Phytolithe†; Psocortene; Squaphane; Squaphane E; Squaphane Masque-Creme; Squaphane P; Squaphane S; **Ger:** Lorinden T†; Psorigerb N†; **Hong Kong:** 2-4-2†; Cocois†; Egopsoryl TA; Fongitar; Ionil-T; Locacorten Tar†; Multi-Tar; Polytar; Polytar Emollient; Sebitar; **Hung:** Aknefug-liquid N†; Polytar; Polytar AF; **India:** Derobin Skin; Ionax T; **Indon:** Polytar; Alphosyl HC†; Capasal; Cocois; Denorex; Gelcotar†; Ionil-T†; Polytar; Polytar Emollient†; Pragmatar; **Israel:** Alphosyl HC†; Alphosyl†; Capasal; CT Ointment†; CT Pomade†; CT Shampoo†; Polytar; Topocorten-Tar; **Ital:** Alphosyl†; Balta-Crin Tar†; Rvescal Tar; **Malaysia:** Cocois†; Egopsoryl TA; Mentar; Polytar; Sebitar; **Mex:** Antaderm; Dariseb; Dealan; Dermoscalp; Ionil-T; Jabon del Tio Nacho; Polytar; Sebryl; Sebryl Plus; Sebstop; Shampoo del Tio Nacho; **Neth:** Denorex; **NZ:** Coco-Scalp; Cocois†; Egopsoryl TA; Fongitar†; Ionil-T; Polytar; Polytar Emollient; Polytar Plus; Sebitar; **Philipp:** Fongitar; Ionil-T; Polytar; **Pol:** Cocois; Polytar AF; Psoriasis; **Port:** Alpha Cade; Banholeum Composto; Betacade†; Edoltar†; Fongitar; Polytar; Sucaderm†; **S.Afr:** Alphosyl; Fongitar; Haarlemensis; Oxipor VHC; Polytar; SB Universal Ointment; **Singapore:** Denorex†; Egopsoryl TA; Fongitar; Ionil-T; Polytar; Sebitar; **Spain:** Alphosyl; Bazalin; Emolytar; Ionil Champu; Ionil†; Polytar; Quinortar†; Tar Isdin Plus†; **Swed:** Alphosyl†; **Switz:** Alphosyl†; **Thai:** Fongitar; Ionil-T†; Polytar; **Turk:** Kadolin; Wilkinson; **UK:** Alphosyl HC; Capasal; Cocois; Polytar AF; Polytar Emollient; Polytar Liquid; Polytar Plus; Pragmatar†; Psorin; Sebco; Snowlire; Varicose Ointment; **USA:** Boil Ease; Ionil-T; Medotar; Neutrogena T/Salt; Sal-Oil-T; Sebex-T; SLT†; Tarlene; Tarsum; X-Seb T; X-Seb T Plus; **Venez:** Vitart.

Tazarotene (BAN, USAN, rINN)

AGN-190168; Tatsaroteni; Tazaroten; Tazarotène; Tazaroteno; Tazarotenum. Ethyl 6-[(4,4-dimethylthiochroman-6-yl)ethynyl]nicotinate.

Tazarотен
C₂₁H₂₁NO₂S = 351.5.
CAS — 118292-40-3.
ATC — D05AX05.
ATC Vet — QD05AX05.



Adverse Effects and Precautions

As for Tretinoin, p.1618.

Systemic absorption from tazarotene applied topically is low, and the most frequent adverse effects are on the skin; the incidence of adverse events appears to be concentration related.

Animal studies have indicated that tazarotene is fetotoxic and teratogenic, and licensed product information recommends that tazarotene should not be used during pregnancy or in women planning a pregnancy. Similarly, tazarotene should not be used, or used with caution, during breast feeding, as *animal* data indicate that it may be distributed into breast milk.

Effects on the skin. A 57-year-old man with diabetes and recalcitrant psoriasis on the trunk and limbs developed acute dermatitis¹ in the genital area 2 weeks after starting treatment with topical tazarotene 0.1%. The affected areas became ulcerated over the next few days. It was suspected that accidental contact with the tazarotene that had been applied to the truncal

psoriasis was responsible. Pyogenic granuloma has been associated with topical tazarotene and other retinoids given orally or applied topically (see Effects on the Skin, Hair, and Nails, under Isotretinoin, p.1601).

1. Wollina U. Genital ulcers in a psoriasis patient using topical tazarotene. *Br J Dermatol* 1998; **138**: 713–14.

Uses and Administration

Tazarotene is a retinoid used for the topical treatment of mild to moderate acne and plaque psoriasis, and to treat signs of photoageing. Tazarotene is a prodrug that is de-esterified in the skin to its active form, tazarotenic acid. The mode of action is unknown but it appears to modulate cell proliferation and differentiation.

In the treatment of psoriasis, tazarotene 0.05% cream or gel is used initially and increased to 0.1% if necessary. It is applied once daily in the evening. In the UK tazarotene is licensed for use in patients with psoriasis affecting up to 10% of the body-surface; in the USA, it may be used on psoriasis involving up to 20% of the body-surface.

In the treatment of acne, tazarotene is applied as a 0.1% gel or cream once daily in the evening.

There may be exacerbation of acne during early treatment or of psoriasis at any time during treatment. The treatment period is usually up to 12 weeks, although tazarotene has been used for up to 12 months in the treatment of psoriasis.

A 0.1% cream is used in the topical treatment of certain signs of photoageing (facial fine wrinkling, mottled hypo- and hyperpigmentation, and benign facial lentiginous). It is applied once daily at bedtime to lightly cover the entire face.

Reviews.

1. Foster RH, *et al.* Tazarotene. *Drugs* 1998; **55**: 705–11.
2. Tang-Liu DD-S, *et al.* Clinical pharmacokinetics and drug metabolism of tazarotene: a novel topical treatment for acne and psoriasis. *Clin Pharmacokinet* 1999; **37**: 273–87.
3. Guenther LC. Optimizing treatment with topical tazarotene. *Am J Clin Dermatol* 2003; **4**: 197–202.

Malignant neoplasms. There has been some interest in the use of topical tazarotene in the treatment of neoplasms affecting the skin. Preliminary studies have reported some lesion regression or clearance in basal cell¹ and squamous cell carcinomas² (p.673), and mycosis fungoides³ (p.657).

1. Bianchi L, *et al.* Topical treatment of basal cell carcinoma with tazarotene: a clinicopathological study on a large series of cases. *Br J Dermatol* 2004; **151**: 148–56.
2. Bardazzi F, *et al.* A pilot study on the use of topical tazarotene to treat squamous cell carcinoma in situ. *J Am Acad Dermatol* 2005; **52**: 1102–4.
3. Apisarnthanarax N, *et al.* Tazarotene 0.1% gel for refractory mycosis fungoides lesions: an open-label pilot study. *J Am Acad Dermatol* 2004; **50**: 600–607.

Skin disorders. Tazarotene is used for the topical treatment of mild to moderate acne^{1,2} (p.1577) and plaque psoriasis^{3,4} (p.1583); benefit has also been reported for psoriasis of the nails.^{5,6} Improvement has been reported too in keratinisation disorders such as Darier's disease^{7,8} (p.1578) and congenital ichthyosis^{9–11} (p.1580). Topical tazarotene can also improve some signs of photoageing (p.1581), including fine wrinkling, mottled hyperpigmentation, and lentiginous (liver spots).^{12–14}

1. Leyden JJ. Meta-analysis of topical tazarotene in the treatment of mild to moderate acne. *Cutis* 2004; **74** (4 suppl): 9–15.
2. Shalita AR, *et al.* Effects of tazarotene 0.1% cream in the treatment of facial acne vulgaris: pooled results from two multicenter, double-blind, randomized, vehicle-controlled, parallel-group trials. *Clin Ther* 2004; **26**: 1865–73.
3. Weinstein GD, *et al.* Tazarotene cream in the treatment of psoriasis: two multicenter, double-blind, randomized, vehicle-controlled studies of the safety and efficacy of tazarotene creams 0.05% and 0.1% applied once daily for 12 weeks. *J Am Acad Dermatol* 2003; **48**: 760–7.
4. Dando TM, Wellington K. Topical tazarotene: a review of its use in the treatment of plaque psoriasis. *Am J Clin Dermatol* 2005; **6**: 255–72.
5. Scher RK, *et al.* Tazarotene 0.1% gel in the treatment of fingernail psoriasis: a double-blind, randomized, vehicle-controlled study. *Cutis* 2001; **68**: 355–8.
6. Bianchi L, *et al.* Tazarotene 0.1% gel for psoriasis of the fingernails and toenails: an open, prospective study. *Br J Dermatol* 2003; **149**: 207–9.
7. Oster-Schmidt C. The treatment of Darier's disease with topical tazarotene. *Br J Dermatol* 1999; **141**: 603–4.
8. Brazzelli V, *et al.* Linear Darier's disease successfully treated with 0.1% tazarotene gel "short-contact" therapy. *Eur J Dermatol* 2006; **16**: 59–61.
9. Hofmann B, *et al.* Effect of topical tazarotene in the treatment of congenital ichthyosis. *Br J Dermatol* 1999; **141**: 642–6.
10. Marulli GC, *et al.* Type I lamellar ichthyosis improved by tazarotene 0.1% gel. *Clin Exp Dermatol* 2003; **28**: 391–3.
11. Kundu RV, *et al.* Lamellar ichthyosis treated with tazarotene 0.1% gel. *J Am Acad Dermatol* 2006; **55** (suppl 5): S94–S95.

12. Phillips TJ, *et al.* Efficacy of 0.1% tazarotene cream for the treatment of photodamage: a 12-month multicenter, randomized trial. *Arch Dermatol* 2002; **138**: 1486–93.
13. Machtinger LA, *et al.* Histological effects of tazarotene 0.1% cream vs. vehicle on photodamaged skin: a 6-month, multicenter, double-blind, randomized, vehicle-controlled study in patients with photodamaged facial skin. *Br J Dermatol* 2004; **151**: 1245–52.
14. Kang S, *et al.* A multicenter, randomized, double-blind trial of tazarotene 0.1% cream in the treatment of photodamage. *J Am Acad Dermatol* 2005; **52**: 268–74.

Preparations

Proprietary Preparations (details are given in Part 3)

Austria: Zorac; **Belg:** Zorac; **Braz:** Zorac†; **Canada:** Tazorac; **Cz:** Tazorac; **Fin:** Zorac†; **Fr:** Zorac; **Ger:** Zorac; **Gr:** Zorac; **India:** La Tez; Tazret†; **Irl:** Zorac; **Israel:** Zorac; **Ital:** Zorac; **Mex:** Suretin; **Pol:** Zorac; **S.Afr:** Zorac; **Spain:** Zorac; **Swed:** Zorac†; **Switz:** Zorac; **UK:** Zorac; **USA:** Avage; Tazorac.

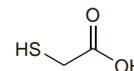
Thioglycolic Acid

Kwas tioglikolowy; Tioglicólico, ácido. Mercaptoacetate acid.

ТИОГЛИКОЛЕВАЯ КИСЛОТА

C₂H₃O₂S = 92.12.

CAS — 68-11-1.



Calcium Thioglycollate

Calcium Mercaptoacetate; Tioglicolato cálcico. Calcium mercaptoacetate trihydrate.

ТИОГЛИКОЛАТ КАЛЬЦИЯ

C₂H₃CaO₂S₂·3H₂O = 184.2.

CAS — 814-71-1.

Profile

Thioglycolic acid is used, usually as the calcium salt, in depilatory preparations. Thioglycollates are also used in hair waving or straightening products with potassium bromate as the neutraliser. There have been reports of skin reactions associated with the use of thioglycollates.

Tioxolone (BAN, rINN)

OL-110; Thioxolone; Tioksolon; Tioksoloni; Tioxolon; Tioxolona; Tioxolonum. 6-Hydroxy-1,3-benzoxathiol-2-one.

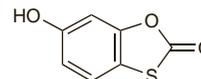
ТИОКСОЛОН

C₇H₄O₂S = 168.2.

CAS — 4991-65-5.

ATC — D10AB03.

ATC Vet — QD10AB03.



Pharmacopoeias. In Pol.

Profile

Tioxolone has astringent and keratolytic effects, and has been used topically in the treatment of various skin and scalp disorders.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: **Ger:** Losco†.

Titanium Dioxide

CI Pigment White 6; Colour Index No. 77891; E171; Oxidititanicitatis; Titanidioksidi; Titanidioxid; Titan-dioxid; Titane, dioxyde de; Titanii dioxidum; Titanio, dióxido de; Titanium Oxide; Titano dioksidas; Titanium Dioksid; Tytanu(IV) tlenek.

Двухокись Титана; Диоксид Титана

TiO₂ = 79.87.

CAS — 13463-67-7.

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

Ph. Eur. 6.2 (Titanium Dioxide). A white or almost white powder. Practically insoluble in water; it does not dissolve in dilute mineral acids but dissolves slowly in hot concentrated sulfuric acid.

USP 31 (Titanium Dioxide). A white odourless powder. Insoluble in water, in hydrochloric acid, in nitric acid, and in 2N sulfuric acid; dissolves in hot sulfuric acid and in hydrofluoric acid; it is rendered soluble by fusion with potassium bisulfate or with alkali hydroxides or carbonates. A 10% suspension in water is neutral to litmus.