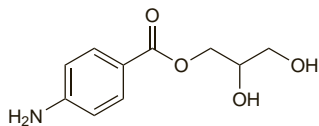


**Lisadimate** (USAN, rINN)

Glyceryl Aminobenzoate; Glyceryl PABA; Lisadimato; Lisadimatum. Glyceryl 1-(4-aminobenzoate).

Лизадимат

$C_{10}H_{13}NO_4 = 211.2$ .  
CAS — 136-44-7.

**Profile**

Lisadimate, a substituted aminobenzoate, is a sunscreen (see p.1576) with actions similar to those of aminobenzoic acid (p.1589). It is effective against UVB light (for definitions, see p.1580).

**Preparations**

**Proprietary Preparations** some preparations are listed in Part 3.

**Lithium Succinate**

Litio, succinato de.

Лития Сукцинат

$C_4H_6O_4 \cdot xLi$ .  
CAS — 16090-09-8.

ATC — D11AX04.  
ATC Vet — QD11AX04.

**Profile**

Lithium succinate is reported to have anti-inflammatory properties and is used as an 8% cream or ointment, usually with zinc sulfate. It is applied twice daily initially in the treatment of seborrhoeic dermatitis (p.1584). It should be used with caution in patients with psoriasis as it may exacerbate their condition.

**References.**

- Gould DJ, et al. A double-blind, placebo-controlled, multicenter trial of lithium succinate ointment in the treatment of seborrhoeic dermatitis. *J Am Acad Dermatol* 1992; **26**: 452-7.
- Suelenaere C, et al. Use of topical lithium succinate in the treatment of seborrhoeic dermatitis. *Dermatology* 1992; **184**: 194-7.
- Langtry JA, et al. Topical lithium succinate ointment (Efalith) in the treatment of AIDS-related seborrhoeic dermatitis. *Clin Exp Dermatol* 1997; **22**: 216-19.

**Preparations**

**Proprietary Preparations** (details are given in Part 3)

**Multi-ingredient:** **Arg.:** Litiocarm†; **Austria:** Efalith; **Belg.:** Efalith; **Ger.:** Efadimerin; **Il.:** Efalith; **Switz.:** Efalith.

**Maggots**

Larvas; Sterile Larvae.

Личинки

**Profile**

Maggots used in wound management are the live sterile larvae of *Lucilia sericata*, the common greenbottle fly. Larval therapy (sometimes called biosurgery) may be used for debridement of infected or necrotic wounds (p.1585), including diabetic foot ulcers. Maggots produce a mixture of proteolytic enzymes that breaks down the necrotic tissue while leaving the healthy tissue unharmed, and kill or prevent the growth of micro-organisms, particularly Gram-positive bacteria. The movement of the maggots also appears to stimulate the growth of granulation tissue.

The maggots are applied to the surface of the wound and kept in place with dressings for up to 3 days. They are removed with the dressing, and the wound is irrigated with sodium chloride solution; any remaining maggots are removed with forceps.

Maggots should not be applied to wounds that have a tendency to bleed easily, or that communicate with a body cavity or any internal organ. Pain has been reported with larval therapy and some patients may require analgesics.

**References.**

- Courtenay M, et al. Larva therapy in wound management. *J R Soc Med* 2000; **93**: 72-4.
- Jukema GN, et al. Amputation-sparing treatment by nature: "surgical" maggots revisited. *Clin Infect Dis* 2002; **35**: 1566-71.
- Sherman RA, Shimoda KJ. Presurgical maggot debridement of soft tissue wounds is associated with decreased rates of postoperative infection. *Clin Infect Dis* 2004; **39**: 1067-70.
- Armstrong DG, et al. Maggot therapy in "lower-extremity hospice" wound care: fewer amputations and more antibiotic-free days. *J Am Podiatr Med Assoc* 2005; **95**: 254-7.
- Steenvoorde P, et al. Maggot debridement therapy: free-range or contained? An in-vivo study. *Adv Skin Wound Care* 2005; **18**: 430-5.

**Preparations**

**Proprietary Preparations** (details are given in Part 3)

**UK:** LarvE.

**Melanin**

Меланин

**Profile**

Melanin is a group of natural pigments found in many plants and animals; they are present in human skin and hair. Natural and synthetic forms of melanin have been used in sunscreen preparations.

**Preparations**

**Proprietary Preparations** (details are given in Part 3)

**Arg.:** Fotobloc.

**Multi-ingredient:** **Arg.:** Fotocrem Ultra; **Chile:** ProZone Face; ProZone Gel; **Mex.:** ProZone Body; ProZone Face; ProZone Gel; ProZone Ultra; ProZone Ultra Fluido.

**Mequinol** (USAN, rINN)

BMS-181158; p-Guaiacol; 4-HA; 4-Hidroxiانىsol; HQMME; Hydroquinone Monomethyl Ether; p-Hydroxyanisole; Hydroxyquinone Methyl Ether; Méquinol; Mequinolum; Metoxifenol; p-Metoxifenol. 4-Methoxyphenol.

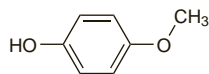
Меквинол

$C_7H_8O_2 = 124.1$ .

CAS — 150-76-5.

ATC — D11AX06.

ATC Vet — QD11AX06.

**Profile**

Mequinol is used similarly to hydroquinone (p.1598), in concentrations of up to 20%, in the treatment of hyperpigmentation (see Pigmentation Disorders, p.1582). A preparation containing mequinol 2% with tretinoin 0.01% is used for the treatment of solar lentigines (liver spots).

**Adverse effects.** A report of severe reversible irregular hypopigmentation of the hands, arms, neck, and legs in a West Indian woman who applied a bleaching wax containing mequinol for 2 to 3 months to lighten the colour of her skin.<sup>1</sup>

- Boyle J, Kennedy CTC. British cosmetic regulations inadequate. *BMJ* 1984; **288**: 1998-9.

**Pigmentation disorders.** References.

- Fleischer AB, et al. The combination of 2% 4-hydroxyanisole (mequinol) and 0.01% tretinoin is effective in improving the appearance of solar lentigines and related hyperpigmented lesions in two double-blind multicenter clinical studies. *J Am Acad Dermatol* 2000; **42**: 459-67.
- Njoo MD, et al. Depigmentation therapy in vitiligo universalis with topical 4-methoxyphenol and the Q-switched ruby laser. *J Am Acad Dermatol* 2000; **42**: 760-9.
- Ortonne JP, et al. Safety and efficacy of combined use of 4-hydroxyanisole (mequinol) 2%/tretinoin 0.01% solution and sunscreen in solar lentigines. *Cutis* 2004; **74**: 261-4.
- Jarratt M. Mequinol 2%/tretinoin 0.01% solution: an effective and safe alternative to hydroquinone 3% in the treatment of solar lentigines. *Cutis* 2004; **74**: 319-22.
- Draeos ZD. The combination of 2% 4-hydroxyanisole (mequinol) and 0.01% tretinoin effectively improves the appearance of solar lentigines in ethnic groups. *J Cosmet Dermatol* 2006; **5**: 239-44.

**Preparations**

**Proprietary Preparations** (details are given in Part 3)

**Austria:** Leucobasal; **Braz.:** Leucodin; **Fr.:** Any; Leucodinine B; **Gr.:** Leucodinine-M; **Spain:** Novo Dermoguinona.

**Multi-ingredient:** **Canad.:** Solage†; **USA:** Solage.

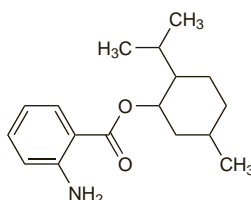
**Meradimate** (USAN, rINN)

Menthyl O-Aminobenzoate; Menthyl Anthranilate; Méradimate; Meradimato; Meradimatum. 5-Methyl-2-(1-methylethyl)-cyclohexyl 2-aminobenzoate.

Мерадимат

$C_{17}H_{25}NO_2 = 275.4$ .

CAS — 134-09-8.



**NOTE.** Do not confuse with methyl anthranilate (p.1607).

Neo-Heliopan MA is a trade name that has been used for meradimate.

**Pharmacopoeias.** In US.

**USP 31** (Meradimate). Store in airtight containers.

**Profile**

Meradimate is used as a sunscreen (p.1576). It is effective against UVA light (for definitions, see p.1580).

**Preparations**

**Proprietary Preparations** some preparations are listed in Part 3.

**Ammoniated Mercury**

Aminomercuric Chloride; Hydrargyri Aminochloridum; Hydrargyrum Amidochloratum; Hydrargyrum Ammoniatum; Hydrargyrum Praecipitatum Album; Mercuric Amidochloride; Mercurio Ammonium Chloride; Mercurio amoniacal; Mercury Amide Chloride; Mercury Aminochloride; Precipitado blanco (de mercurio); White Precipitate.

Хлористый Меркураммоний

$NH_2HgCl = 252.1$ .

CAS — 10124-48-8.

ATC — D08AK01.

ATC Vet — QD08AK01.

**NOTE.** 'White Precipitate' has also been used as a name for Precipitated Mercurous Chloride.

**Pharmacopoeias.** In US.

**USP 31** (Ammoniated Mercury). A white amorphous powder or pulverulent pieces; odourless. It is stable in air, but darkens on exposure to light. Insoluble in water and in alcohol; readily soluble in warm hydrochloric, nitric, and acetic acids. Protect from light.

**Profile**

Ammoniated mercury was formerly used topically in the treatment of skin infections and psoriasis but the use of such mercurial preparations is generally deprecated. Frequent or prolonged application to large areas or to broken skin or mucous membranes can cause mercury poisoning (see p.2341) and use on infants has produced acrodymia (pink disease). Ammoniated mercury is also a potent sensitiser and can produce allergic reactions.

**Effects on the kidneys.** Of 60 patients who were found to have nephrotic syndrome, 32 had used skin-lightening creams containing 5 to 10% of ammoniated mercury.<sup>1</sup> Concentrations of mercury in the urine of these patients were up to 250 nanograms/mL compared with a usual upper limit of 80 nanograms/mL. Of 26 patients followed up for up to 2 years, 13 had no remission or response to treatment; 6 of these had used skin lighteners.

- Barr RD, et al. Nephrotic syndrome in adult Africans in Nairobi. *BMJ* 1972; **2**: 131-4.

**Preparations**

**Proprietary Preparations** (details are given in Part 3)

**Multi-ingredient:** **Cz.:** Homeovox; **Hung.:** Dermaforine†.

**Mesulphen** (BAN)

Mesulfen (pINN); Dimethyldiphenylene Disulphide; Dimethylthianthrene; Mesulfen; Mesulfene; Mesulfene; Mesulfenum. It consists mainly of 2,7-dimethylthianthrene.

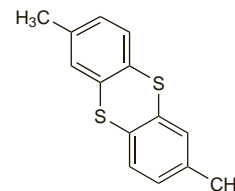
Месульфен

$C_{14}H_{12}S_2 = 244.4$ .

CAS — 135-58-0.

ATC — D10AB05; P03AA03.

ATC Vet — QD10AB05; QP53AA01.



**Pharmacopoeias.** *Jpn* includes thianthol, a mixture of 2,7-dimethylthianthrene and ditolyl disulfide.

**Profile**

Mesulphen has been used as a parasiticide and antipruritic in a range of skin disorders including acne, scabies, and seborrhoea. Sensitivity to mesulphen has occasionally been reported.

**Preparations**

**Proprietary Preparations** (details are given in Part 3)

**Ger.:** Citemul S†; **Switz.:** Soufrol.

**Multi-ingredient:** **India:** Polyderm†.

## Methoxsalen (BAN)

Ammoidin; Amoidina; Methoxalenum; 8-Methoxy-psoralen; Metoksaleeni; Metoksalen; Metoxalen; Metoxaleno; Metoxipsoraleno; 8-MOP; Xanthotoxin; Xantotoxina. 9-Methoxyfuro[3,2-g]chromen-7-one; 9-Methoxy-7H-furo[3,2-g][1]benzopyran-7-one.

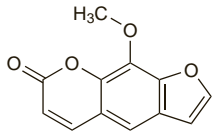
Метоксален

$C_{12}H_8O_4 = 216.2$ .

CAS — 298-81-7.

ATC — D05AD02; D05BA02.

ATC Vet — QD05AD02; QD05BA02.



**Pharmacopoeias.** In *Jpn* and *US*.

**USP 31** (Methoxsalen). White to cream-coloured, odourless, fluffy, needle-like crystals. Practically insoluble in water; sparingly soluble in boiling water and in ether; soluble in boiling alcohol, in acetone, in acetic acid, in propylene glycol, and in benzene; freely soluble in chloroform. Protect from light.

### Adverse Effects

Methoxsalen given orally commonly causes nausea and less frequently mental effects including insomnia, nervousness, and depression.

Photochemotherapy or PUVa (see under Uses and Administration, below) may cause pruritus and mild transient erythema. Other effects include oedema, dizziness, headache, vesiculation, bulla formation, acneform eruption, and severe skin pain. Overexposure to sunlight or UVA radiation may produce severe burns in patients being treated with psoralens. Hypertrichosis, pigmentation alterations of skin or nails, and onycholysis, have also been reported. PUVa can produce premature ageing of the skin, and may be associated with an increased risk of malignant cutaneous neoplasms.

**Carcinogenicity.** See under Effects on the Skin, below.

There has been concern about a possible increased risk of noncutaneous malignancies associated with PUVa. However, a long-term study of 1380 patients followed for 20 years reported no overall increase in solid malignancies, lymphoma, or leukaemia.<sup>1</sup>

1. Stern RS, Väkevä LH. PUVa Follow-up Study. Noncutaneous malignant tumors in the PUVa follow-up study: 1975–1996. *J Invest Dermatol* 1997; **108**: 897–900.

**Effects on the eyes.** Free methoxsalen has been detected in the lens of the eye for at least 12 hours after oral doses.<sup>1</sup> It may become integrated into the structure of the lens if there is exposure to UV light, promoting cataract formation in patients who fail to wear suitable eye protection for 12 to 24 hours after methoxsalen ingestion.<sup>2</sup> However, provided that eye protection is used there appears to be no significant dose-dependent increase in the risk of cataract formation,<sup>3</sup> although a higher risk of developing nuclear sclerosis and posterior subcapsular opacities has been noted in patients who have received more than 100 treatments.<sup>4</sup> Other ocular effects include dose-related transient visual-field defects reported in 3 patients receiving PUVa therapy.<sup>5</sup> Psoralens may also increase the sensitivity of the retina to visible light.<sup>6</sup>

1. Lerman S, et al. Potential ocular complications from PUVa therapy and their prevention. *J Invest Dermatol* 1980; **74**: 197–9.  
2. Woo TY, et al. Lenticular psoralen photoproducts and cataracts of a PUVa-treated psoriatic patient. *Arch Dermatol* 1985; **121**: 1307–8.  
3. See J-A, Weller P. Ocular complications of PUVa therapy. *Australas J Dermatol* 1993; **34**: 1–4.  
4. Stern RS, et al. Ocular findings in patients treated with PUVa. *J Invest Dermatol* 1985; **85**: 269–73.  
5. Fenton DA, Wilkinson JD. Dose-related visual-field defects in patients receiving PUVa therapy. *Lancet* 1983; **i**: 1106.  
6. Souêtre E, et al. 5-Methoxypsoralen increases the sensitivity of the retina to light in humans. *Eur J Clin Pharmacol* 1989; **36**: 59–61.

**Effects on the hair.** Hypertrichosis was noticed in 15 of 23 female patients receiving PUVa therapy compared with 2 of 14 patients treated with UVA alone.<sup>1</sup>

1. Rampen FHJ. Hypertrichosis in PUVa-treated patients. *Br J Dermatol* 1983; **109**: 657–60.

**Effects on the immune system.** PUVa therapy appears to have immunosuppressive effects and inhibits lymphocytes, polymorphonuclear leucocytes, and Langerhans' cells.<sup>1–3</sup> It is capable of inducing antinuclear antibody formation and a syndrome similar to systemic lupus syndrome has developed during treat-

ment.<sup>4,5</sup> An immunological basis has also been suspected for the development of nephrotic syndrome in one patient who received PUVa therapy.<sup>6</sup>

See also Hypersensitivity, below.

1. Farber EM, et al. Long-term risks of psoralen and UV-A therapy for psoriasis. *Arch Dermatol* 1983; **119**: 426–31.  
2. Morison WL, et al. Abnormal lymphocyte function following long-term PUVa therapy for psoriasis. *Br J Dermatol* 1983; **108**: 445–50.  
3. Chang A, et al. PUVa and UVB inhibit the intra-epidermal accumulation of polymorphonuclear leukocytes. *Br J Dermatol* 1988; **119**: 281–7.  
4. Bruze M, et al. Fatal connective tissue disease with antinuclear antibodies following PUVa therapy. *Acta Derm Venereol (Stockh)* 1984; **64**: 157–60.  
5. Bruze M, Ljunggren B. Antinuclear antibodies appearing during PUVa therapy. *Acta Derm Venereol (Stockh)* 1985; **65**: 31–6.  
6. Lam Thun Mine LTK, et al. Nephrotic syndrome after treatment with psoralens and ultraviolet A. *BMJ* 1983; **287**: 94–5.

**Effects on the skin. MALIGNANT NEOPLASMS.** Squamous cell carcinoma, basal cell carcinoma, keratoacanthoma, actinic keratosis, Bowen's disease, and malignant melanoma have all been reported during or after cessation of PUVa.<sup>1–3</sup> There have been several large long-term follow-up studies to assess the risk of non-melanoma skin cancer in patients receiving PUVa therapy. Early studies from Europe found no clear evidence that PUVa was independently carcinogenic but did find that previous treatment with arsenic, methotrexate, or ionising radiation increased the incidence of skin tumours.<sup>4</sup> Studies from the USA have found an increase in the incidence of basal cell carcinoma and squamous cell carcinoma independent of other treatment,<sup>5</sup> which was dose-related in some studies.<sup>6</sup> Male genitalia appeared to be particularly susceptible.<sup>7</sup> It has been suggested that the differences between the findings might be due to the fact that in Europe higher and fewer doses are used and the median total dose employed may be only 29% of that used in the USA.<sup>8</sup> However, further studies from northern Europe also found a dose-related increase in the risk of developing squamous cell carcinomas.<sup>9–11</sup> One small series suggested that about 50% of the recipients of high-dose PUVa went on to develop squamous cell carcinomas or premalignant lesions.<sup>12</sup> While some European workers have findings that confirm the increased susceptibility of the male genitalia<sup>13</sup> others have failed to find any such evidence.<sup>14,15</sup> Ongoing surveillance of patients is encouraged as US data<sup>16,17</sup> show the risk of skin cancers and genital tumours to persist long-term after stopping PUVa therapy. A few patients have gone on to develop metastatic disease.<sup>18,19</sup>

There are anecdotal reports of malignant melanomas occurring in patients who had received PUVa. A prospective study<sup>20</sup> in 1380 patients with psoriasis who were first treated with PUVa in 1975 or 1976 found that the risk of melanoma increases about 15 years after the first treatment with PUVa and that the risk was increased especially in patients who had received 250 treatments or more. The authors suggested that long-term PUVa should therefore be used with caution, especially in younger patients. Further follow-up of this group<sup>21</sup> found the incidence of melanoma to increase over time. However, a similar follow-up study<sup>11</sup> of 4799 patients treated with PUVa found no increase in the risk for malignant melanoma. Comparing their findings with the earlier study, the authors suggested that the results might differ because one-fifth of their cohort had received both PUVa in which lower UVA doses are used. The comment has also been made<sup>22</sup> that patients receiving long-term therapy should be followed up carefully and that such therapy should not be used in patients at risk for melanoma.

A study<sup>23</sup> of follow-up data on patients who had received trioxysalen bath PUVa did not find an increase in risk of developing either squamous cell carcinoma or malignant melanoma, but the authors suggested that further study is needed to determine the carcinogenicity of trioxysalen PUVa.

1. Reshad H, et al. Cutaneous carcinoma in psoriatic patients treated with PUVa. *Br J Dermatol* 1984; **110**: 299–305.  
2. Kemmett D, et al. Nodular malignant melanoma and multiple squamous cell carcinomas in a patient treated by photochemotherapy for psoriasis. *BMJ* 1984; **289**: 1498.  
3. Suurmond D, et al. Skin cancer and PUVa maintenance therapy for psoriasis. *Br J Dermatol* 1985; **113**: 485–6.  
4. Henseler T, et al. Skin tumors in the European PUVa study. *J Am Acad Dermatol* 1987; **16**: 108–16.  
5. Forman AB, et al. Long-term follow-up of skin cancer in the PUVa-48 cooperative study. *Arch Dermatol* 1989; **125**: 515–19.  
6. Stern RS, et al. Non-melanoma skin cancer occurring in patients treated with PUVa five to ten years after first treatment. *J Invest Dermatol* 1988; **91**: 120–4.  
7. Stern RS, et al. Genital tumors among men with psoriasis exposed to psoralens and ultraviolet A radiation (PUVa) and ultraviolet B radiation. *N Engl J Med* 1990; **322**: 1093–7.  
8. Moseley H, Ferguson J. Photochemotherapy: a reappraisal of its use in dermatology. *Drugs* 1989; **38**: 822–37.  
9. Bruynzeel I, et al. 'High single-dose' European PUVa regimen also causes an excess of non-melanoma skin cancer. *Br J Dermatol* 1991; **124**: 49–55.  
10. Lindelöf B, et al. PUVa and cancer: a large-scale epidemiological study. *Lancet* 1991; **338**: 91–3.  
11. Lindelöf B, et al. PUVa and cancer risk: the Swedish follow-up study. *Br J Dermatol* 1999; **141**: 108–12.  
12. Lever LR, Farr PM. Skin cancers or premalignant lesions occur in half of high-dose PUVa patients. *Br J Dermatol* 1994; **131**: 215–19.  
13. Perkins W, et al. Cutaneous malignancy in males treated with photochemotherapy. *Lancet* 1990; **336**: 1248.

14. Wolff K, Hönigsman H. Genital carcinomas in psoriasis patients treated with photochemotherapy. *Lancet* 1991; **337**: 439.  
15. Aubin F, et al. Genital squamous cell carcinoma in men treated by photochemotherapy: a cancer registry-based study from 1978 to 1998. *Br J Dermatol* 2001; **144**: 1204–6.  
16. Stern RS, et al. The persistent risk of genital tumors among men treated with psoralen plus ultraviolet A (PUVa) for psoriasis. *J Am Acad Dermatol* 2002; **47**: 33–9.  
17. Nijsten TEC, Stern RS. The increased risk of skin cancer is persistent after discontinuation of psoralen-ultraviolet A: a cohort study. *J Invest Dermatol* 2003; **121**: 252–8.  
18. Lewis FM, et al. Metastatic squamous-cell carcinoma in patient receiving PUVa. *Lancet* 1994; **344**: 1157.  
19. Stern RS. Metastatic squamous cell cancer after psoralen photochemotherapy. *Lancet* 1994; **344**: 1644–5.  
20. Stern RS, et al. Malignant melanoma in patients treated for psoriasis with methoxsalen (psoralen) and ultraviolet A radiation (PUVa). *N Engl J Med* 1997; **336**: 1041–5.  
21. Stern RS. The PUVa Follow Up Study. The risk of melanoma in association with long-term exposure to PUVa. *J Am Acad Dermatol* 2001; **44**: 755–61.  
22. Wolff K. Should PUVa be abandoned? *N Engl J Med* 1997; **336**: 1090–1.  
23. Hannuksela-Svahn A, et al. Trioxsalen bath PUVa did not increase the risk of squamous cell skin carcinoma and cutaneous malignant melanoma in a joint analysis of 944 Swedish and Finnish patients with psoriasis. *Br J Dermatol* 1999; **141**: 497–501.

**NON-MALIGNANT SKIN DISORDERS.** Toxic pustuloderma, marked by erythema and superficial pustular lesions, has been reported in a patient given PUVa therapy for mycosis fungoides.<sup>1</sup> There have been a number of reports of bullous pemphigoid occurring, or recurring, in patients treated with PUVa, usually for psoriasis.<sup>2</sup> A case of lichen planus pemphigoides has also been described in a woman treated with topical PUVa.<sup>3</sup> Another effect sometimes associated with PUVa is severe skin pain;<sup>4,5</sup> the pain may respond to treatment with topical capsaicin.<sup>5</sup> Long-term PUVa treatment accelerates ageing of the skin.<sup>6</sup>

1. Yip J, et al. Toxic pustuloderma due to PUVa treatment. *Br J Dermatol* 1991; **125**: 401–2.  
2. Barnadas MA, et al. Bullous pemphigoid in a patient with psoriasis during the course of PUVa therapy: study by ELISA test. *Int J Dermatol* 2006; **45**: 1089–92.  
3. Kuramoto N, et al. PUVa-induced lichen planus pemphigoides. *Br J Dermatol* 2000; **142**: 509–12.  
4. Burrows NP, et al. PUVa-induced skin pain. *Br J Dermatol* 1993; **129**: 504.  
5. Burrows NP, Norris PG. Treatment of PUVa-induced skin pain with capsaicin. *Br J Dermatol* 1994; **131**: 584–5.  
6. Sator P-G, et al. Objective assessment of photogeing effects using high-frequency ultrasound in PUVa-treated psoriasis patients. *Br J Dermatol* 2002; **147**: 291–8.

**Hypersensitivity.** Hypersensitivity reactions to methoxsalen and PUVa therapy occur rarely but there have been reports of drug-induced fever,<sup>1</sup> bronchoconstriction,<sup>2</sup> and contact dermatitis.<sup>3</sup> Cases of anaphylaxis have also been attributed to methoxsalen<sup>4</sup> and 5-methoxypsoralen.<sup>5</sup>

1. Tóth Kása I, Dobozy A. Drug fever caused by PUVa treatment. *Acta Derm Venereol (Stockh)* 1985; **65**: 557–8.  
2. Ramsay B, Marks JM. Bronchoconstriction due to 8-methoxypsoralen. *Br J Dermatol* 1988; **119**: 83–6.  
3. Takashima A, et al. Allergic contact and photocontact dermatitis due to psoralens in patients with psoriasis treated with topical PUVa. *Br J Dermatol* 1991; **124**: 37–42.  
4. Park JY, et al. Anaphylaxis to 8-methoxypsoralen during photochemotherapy. *Photodermatol Photoimmunol Photomed* 2003; **19**: 37–8.  
5. Legat FJ, et al. Anaphylaxis to 5-methoxypsoralen during photochemotherapy. *Br J Dermatol* 2001; **145**: 821–2.

### Precautions

Methoxsalen should not generally be given to patients with diseases associated with light sensitivity such as porphyria, although it may be used with care in some photosensitivity disorders to decrease sensitivity to sunlight. Other contra-indications include aphakia, melanoma or a history of melanoma, and invasive squamous cell carcinoma. It is generally recommended that PUVa therapy should not be used in children. Methoxsalen should be used with caution in patients with hepatic impairment.

Patients should not sunbathe for 24 hours before and 48 hours after PUVa treatment. They should avoid exposure to sunlight, even through glass or cloud cover for at least 8 hours after methoxsalen ingestion and should wear wrap-around UVA absorbing glasses for 24 hours after ingestion. Photosensitivity is more prolonged after topical application and treated skin should be protected from exposure to sunlight for at least 12 to 48 hours, and possibly for up to a week. Unless specific treatment is required male genitalia should be shielded during PUVa therapy. It has been recommended that patients undergo an ophthalmic examination before starting therapy and at regular intervals thereafter, especially those at increased risk of cataracts. Patients should also receive regular examinations for signs of premalignant or malignant skin lesions. Anti-nuclear