

Inside *Therapeutics: Medicines Update p18 Side-effects of anti-epilepsy drugs p27*

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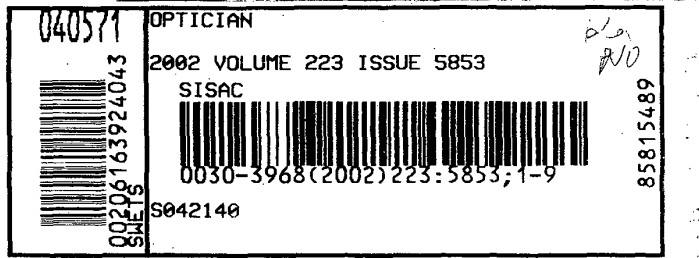
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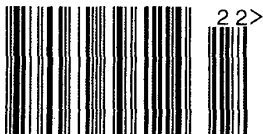
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## Contents

### Features

- 8 Opportunity knocks**  
*John Wilkinson* says get ready for the new NHS.
- 16 The making of a modern practice**  
*Rob Moss* reports on Cambridge-based optometrist Angela Gould's progress as she establishes herself as owner of one of the university town's oldest practices.
- 18 Medicines Update – Part 11**  
*Professor Michael Doughty* provides an overview of eye medicines and other eye care products introduced in the last three months.
- 23 Ocular pharmacokinetics**  
*Dr John Lawrenson* discusses ocular pharmacokinetics and the significance it has for drug delivery and toxicity.
- 26 Drugs database**  
OPTICIAN describes the City Ocular Adverse Reactions to Drugs database.
- 27 Effects of anti-epileptic drugs on visual performance**  
*Emma Roff Hilton, Sarah Hosking and Tim Betts* describe the impact that drugs prescribed to treat epilepsy can have on a patient's vision.
- 31 Clinical Audit Patient Survey**  
*Dale Harris and Bob Hutchinson* look at the dispensing process in practice.
- 32 OPTICIAN Index**  
April saw slower growth than is usual for spring.

### Regulars

- 4 News**
- 10 Products**
- 12 Letters/Comment**  
How to contact OPTICIAN
- 14 Omen**
- 35 Appointments**
- 43 Optical Suppliers' Guide**
- 47 A-Z of anterior eye disease**

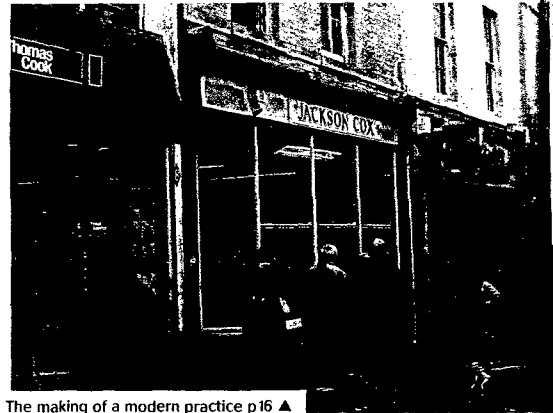
### Next Issue

#### Contact lens monthly

- ◆ *John Meyler and Cristina Schneider* discuss the dangers of ultraviolet light and suggest UV-blocking contact lenses as protection.
- ◆ The second part of our pilot CET series on Visual Recognition in Contact Lens Practice covers fitting characteristics



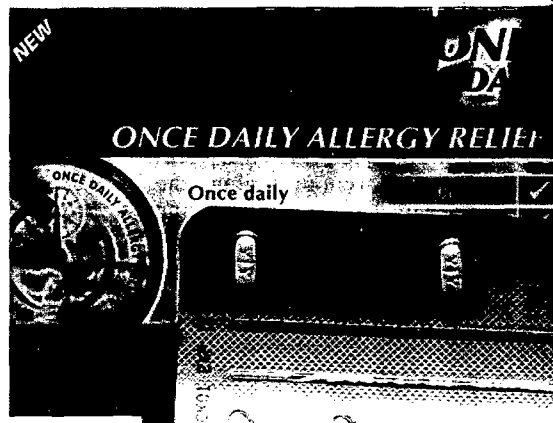
Shake-up in the NHS p8 ▲



The making of a modern practice p16 ▲



Letters p12 ▲



New drugs p18 ▲



This week's front cover

Continued on p11

# Medicines Update

## for optical practitioners – Part 11

MEDICINES UPDATE for optical practitioners is designed to keep the UK optometrist up to date with all aspects of eye medicines and other eye products that can be used to manage a range of minor-to-moderate non sight-threatening conditions or diseases that can affect the external eye.

In addition, the series is designed to keep the optometrist fully informed of the availability and developments of ophthalmic medicines for the management of severe eye diseases and in systemic medicines that could have an impact on the eye or vision, including those medications likely encountered in shared-care schemes.

This part includes several new products

Professor Michael Doughty provides an overview of eye medicines and other eye care products introduced in the past three months

and a brief review of the role of oral antihistamines in the management of seasonal allergic conjunctivitis.

### TEN NEW OPHTHALMIC PRODUCTS

This quarter sees the introduction of another option in re-wetting solutions, a generic carbomer gel, several options for management of seasonal allergic conjunctivitis (including a new topical ocular multiple-acting antihistamine, another generic mast cell stabiliser, and several

products containing the oral antihistamine cetirizine), a new gel formulation of timolol and third prostaglandin analogue for management of open-angle glaucoma (Table 1). Some changes in product availability have also occurred (Table 2).

A new option in re-wetting solutions is available – Blink-n-clean (Figure 1). The idea for this product, as emphasised by its name, is that the combination of the surfactant (tyloxapol) and the substantial quantity of chemical buffer (tromethamine) is designed to disperse

TABLE 1. New ophthalmic pharmaceuticals for UK (May 2002)

Drug name	conc	C	Pharmaceutical	co	Presentation
hydroxypropylmethylcellulose 0.15%, tyloxapol 0.025%, tromethamine 1.2%, EDTA and preserved with polyhexamethylene biguanide 0.0001%		SL CE	COMPLETE BLINK-N-CLEAN	32	15ml multi-use bottle
carbomer 980, sorbitol 4%, EDTA and preserved with cetrimide 0.01 %	0.2%	SL CE	CARBOMER GEL	65	10g multi-use tube
ketotifen, glycerol and preserved with benzalkonium chloride	0.025%	PoM	ZADITEN	40	5 ml multi-use bottle
Na cromoglycate, sorbitol, polysorbate 80, EDTA and preserved with benzalkonium chloride	2%	P	VIVICROM EYE DROPS	66	10 ml multi-use bottle
cetirizine	10mg	GSL P	PIRITIEZE ALLERGY TABLETS	67	7 tablets (GSL) 30 tablets (P)
cetirizine	10mg	P	BENADRYL ONE-A-DAY	70	14 tablets
cetirizine	10mg	P	CETIRIZINE HAYFEVER RELIEF	51	7 tablets
cetirizine	10mg	GSL P	HAYFEVER AND ALLERGY RELIEF	68	7 tablets (GSL) 30 tablets (P)
timolol, sorbitol, lysine, in a carbomer 974P – polyvinyl alcohol gel vehicle, preserved with benzalkonium chloride 0.008 %	0.1%	PoM	NYOGEL EYE GEL	40	5g multi-use bottle
bimatoprost, NaCl, citrate and phosphate buffers, and preserved	0.03%	PoM	LUMIGAN	32	2.5 ml multi-use bottle

protein that can accumulate on the surface of soft contact lenses, and so reduce discomfort associated with a soiled lens.

This issue of buffer ingredients has been raised before with the inclusion of citrate in rewetting solutions to promote protein dissolution.<sup>1</sup> Further comparative studies with tromethamine would be useful. The hypromellose should provide some comfort as well.

The first generic carbomer gel, a true ocular lubricant,<sup>2</sup> for use in the management of dry eye is available, Carbomer gel (Figure 2). It is not a P Medicine, but is CE marked. The product is referred to by its chemical name, polyacrylic acid eye ointment, in the generic listings. As with other products with similar indications, it is the new carbomer 980 that is included (as opposed to the carbomer 934 that was once available in these ocular lubricants).

This new product is not recommended for use while wearing contact lenses, but its licence is 'to relieve eye discomfort and eye dryness in wearers and non-wearers of contact lenses'.

In time for the new allergy season, readers should note that the well-known P Otrivine-Antistine, listed in the College of Optometrists' Formulary, has been repackaged (Figure 3).

The same company has also introduced a completely new PoM option for manage-

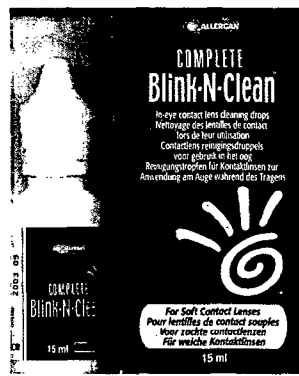


Figure 1. Re-wetting drops for soft contact lenses

ment of seasonal allergic conjunctivitis (SAC), namely ketotifen 0.025 per cent (as PoM Zaditen, Figure 4).

Ketotifen is not a new drug since it was assessed and introduced in the 1980s.<sup>3</sup> It is presented as having three mechanisms by which it can reduce the signs and symptoms of SAC, namely as a histamine H<sub>1</sub> blocking drug, as a mast cell stabiliser and as an anti-eosinophil drug.<sup>3</sup> More recent studies indicate that its affinity for H<sub>1</sub> receptors is the highest reported for topical ocular antihistamines, with an estimated K<sub>i</sub> of around 1nM,<sup>4</sup> although it is not as selective for H<sub>1</sub> receptors as some other drugs. Like another 'second generation' mast-cell stabiliser (ie lodoxamide),<sup>5</sup> it is considered able to reduce histamine release from mast cells as well reduce eosinophil recruitment and activation (company literature), but neither of these other activities appear to be very substantial.<sup>6</sup>

Notwithstanding, as an antihistamine, it can produce substantial reduction in symptoms to an allergen challenge within minutes (company literature) and is considered as comparing very favourably to the use of two other topical ocular antihistamines, namely levocabastine, available as PoM Livosotin and P Livostin Direct,<sup>7</sup> and emedastine, available as PoM Emadine.<sup>8</sup>

In the UK, ketotifen 0.025 per cent eyedrops are indicated for use on a *bds* basis, and the only real limitation is that the current licence is for individuals over 12 years of age. There are no limits to the time period over which it can be used.



Figure 2. Generic carbomer gel lubricant for dry eye



Figure 3. Topical decongestant/antihistamine for hayfever

When used as a 0.05 per cent solution (as available in the US), some 75 per cent of patients using the product reported adequate control of ocular itching and lacrimation within seven days, with the reduction in eye redness (hyperaemia) being slightly less.<sup>9</sup>

An issue that has arisen, especially in comparative studies, is whether the ketotifen eyedrops, presumably the vehicle characteristics, are as comfortable (ie as based on the amount of stinging) as other products.<sup>10,11</sup> It can be noted, however, that while some irritation can be expected, this is a general problem with many eyedrops and the reported effects with ketotifen eyedrops do not appear to be really clinically significant, for example causing very substantial numbers of patients to discontinue therapy.<sup>8,9</sup>

Another sodium cromoglycate eyedrops product is available, P Vivicrom Eye Drops (Figure 5). As with similar products containing this first-generation mast-cell stabiliser, it is indicated for use for both seasonal and perennial allergic conjunctivitis, but not for contact lens wear-related conjunctivitis. It is noteworthy that the package insert stresses that the eye drops 'should be used every day during the hay fever season, even when you are not suffering from any symptoms'. This use should be on a *qds* basis.

With the new allergy season, for grass pollens etc, now under way, there has been a veritable explosion in the options available for oral antihistamines for seasonal allergic conjunctivitis; all of the new products contain cetirizine, a new

Corporate (co) identification for tables

- 1 Ciba Vision Ophthalmics 2 Typharm,
- 3 Rhone-Poulenc-Rorer, 4 Forley,
- 5 Martindale, 6 APS/Berk 7 C-Pharma,
- 8 Cox Pharms, 9 Hillcross Pharms, 10 Norton Healthcare,
- 11 Stevenden Healthcare, 12 Cusi,
- 13 Schering-Plough, 14 Dominion, 15 Distriphar,
- 16 Leo Pharms, 17 Wyeth Labs, 18 Chauvin,
- 19 Hoechst-Marion Roussel, 20 Crookes Healthcare,
- 21 Mentholatum, 22 Alcon, 23 Abbott,
- 24 Johnson & Johnson, 25 ASTA Medical, 26 Norton Consumer,
- 27 Boots; 28 Baker Norton Pharms, 29 NuCare,
- 30 Opus Pharms, 31 Genus Pharms, 32 Allergan, 33 Stafford-Miller,
- 34 Sussex Pharms, 35 Cross-Pharma, 36 NuMark,
- 37 Warner Lambert Consumer, 38 UCB Pharma,
- 39 Novartis Consumer Health, 40 Novartis Ophthalmics (Pharms),
- 41 Surgical Designs, 42 Bausch & Lomb Surgical,
- 43 Wellcome, 44 Regent Labs, 45 Merck Sharpe & Dohme,
- 46 Bioglan, 47 Generics UK, 48 Medeva-Pharma,
- 49 Pharmacia & Upjohn, 50 Mid-Optic,
- 51 Peach Ethical Pharmaceuticals; 52 Chrome-X,
- 53 Chemmedica, 54 Florizel, 55 Roche,
- 56 SSL, 57 Aventis Pharma, 58 Glaxo-Wellcome,
- 59 Lagap Pharma, 60 Spectrum Ophthalmics,
- 61 Vision Pharmaceuticals, 62 VXL, 63 Ophtecs (Euro),
- 64 Pharmacia, 65 Tubilux Pharma, 66 Pharma-Global,
- 67 GlaxoSmithKline Consumer 68 Galpharm, 69 Celltech

TABLE 2. Changes in ophthalmic pharmaceuticals for UK (May 2002)

Drug name	conc	C	Pharmaceutical	co	Presentation
chloramphenicol	0.5%	PoM	SNO-PHENICOL	18	discontinued
betamethasone	0.1%	PoM	BETNESOL	69	10ml multi-use bottle now available again

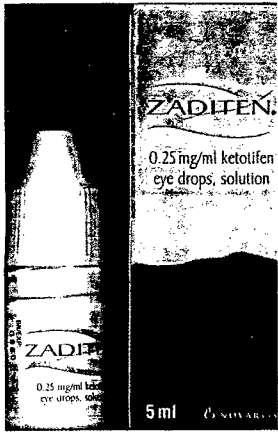


FIGURE 4. Topical antihistamine/mast0cell stabiliser eye drops for hayfever



FIGURE 5. Sodium cromoglicate eyedrops for hayfever and perennial allergic conjunctivitis

generation 'non-drowsy' antihistamine.

These options are the direct result of further deregulation on the access to 'medicines' in that several of these can be added to the ever-growing list of GSL options being made available in small pack sizes of seven tablets.<sup>12,13</sup>

Cetirizine, a histamine H<sub>1</sub>-blocking drug, has a well-established efficacy in reducing the signs and symptoms of seasonal allergic conjunctivitis, as well as nasal symptoms.

Based on both patient reports and external eye assessments with grading schemes, cetirizine 10mg *qd* treatment can produce a clinically significant improvement,<sup>14,15</sup> for example on ocular irritation, itching, lacrimation and conjunctival redness. Newer research indicates that sufficient quantities of cetirizine reach the tear film after oral administration (10mg BDS) to have an impact on polymorphonuclear leukocytes reacting at the conjunctival surface.<sup>16</sup>

The first two cetirizine products on the list should be noted carefully before jumping to conclusions about errors in the listings. Now available as both a P Medicine (30 tablets) and GSL (7 tablets) is Piriteze Allergy Tablets (Figure 6). The product contains cetirizine, and not as might be expected, the older generation antihistamine chlorpheniramine (as found in P Piriton, marketed by the same company).

As with the other products, they are not recommended for use by children under the age of 12 years, but some of the package inserts note that use in children between the ages of six and 12 years can be done under the supervision of a doctor.

again containing cetirizine 10mg, has also been introduced as Benadryl One-a-day Allergy Relief (Figure 7). It should not be confused with Benadryl Allergy Tablets that contain acrivastine 1.3mg. Several generic options containing cetirizine are also now available. These are an addition to the

Pollonase line, namely P Cetirizine Hayfever Relief (Figure 8), and a completely new line from Galpharm, namely Hayfever and Allergy Relief (Figure 9). As with the first new option, the latter generic option is also available in a small pack size as a GSL product for the local supermarket.

At least two other generics for cetirizine, in pack sizes of 30 tablets, have also been

marketed (companies 6 and 46). For all these products, while there are still small print warnings about the possibility of drowsiness as an ADR, when used at the recommended doses cetirizine is considered to have a very low potential for such side effects.<sup>17</sup> Notwithstanding, should optometrists be recommending the use of these products to their patients, time should still be given to consideration of ADRs, and even though some of them may well be attributable to the allergy condition itself,<sup>18</sup> the anti-histamine could still exacerbate the patient's condition.

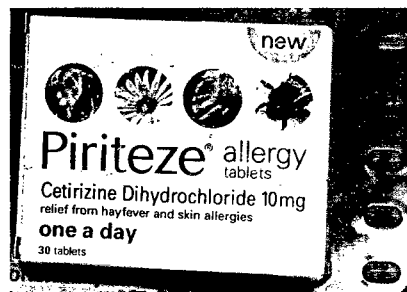
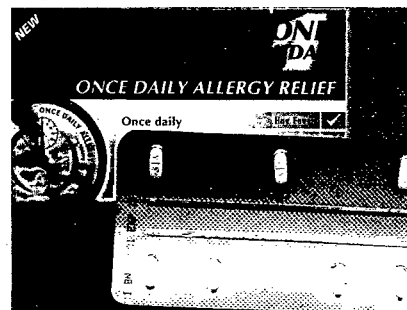


FIGURE 6: Branded cetirizine anti-allergy tablets for hayfever and perennial allergic conjunctivitis



A new option is available for timolol, a non-selective beta-blocker, for management of open-angle glaucoma. The new gel formulation, PoM Nyogel (Figure 10) has timolol 0.1 per cent in a carbomer gel-polyvinyl alcohol (PVA) mixture. The carbomer is carbomer 947P rather than 980 as used in dry-eye products.

This new timolol eye 'gel', also known as 'T-gel', is also different to the on-eye-setting gel used as the vehicle PoM Timoptol LA that contains timolol 0.5 per cent. The gellan gum (also known as Gelrite) solution which is the vehicle for Timoptol LA interacts with divalent cations in the tear film to produce a gel, an ophthalmic gel-forming solution or GFS.<sup>19</sup>

The new timolol gel works on a different principle by interacting with ocular surface mucins. The timolol itself is 'trapped' in the carbomer-PVA polymer and the interaction with the ocular surface, via mucins, is presented as a 'mucoadhesive' gel.<sup>20</sup>

The idea behind the first gel-based ophthalmic timolol product (Timoptol LA or Timoptic XE outside of the UK), was to promote ocular contact time in order to increase ocular drug delivery so as to allow for routine once-daily dosing.<sup>21</sup> An added benefit, partly related to the once-daily dosing, was that systemic cardiovascular effects might be slightly reduced.<sup>22,23</sup> The new timolol 0.05 per cent ophthalmic gel, based on carbomer (polyacrylic acid polymer), has been reported to provide improved ophthalmic delivery in animal models.<sup>24</sup> In clinical trials on non-glaucomatous human eyes, the efficacy of T-gel 0.1 per cent as an ocular hypotensive agent has been reported to be equivalent to timolol 0.5 per cent.<sup>25</sup> As with the older timolol gel, the new product, PoM Nyogel, is indicated for once-daily use, preferably in the morning to hopefully avoid night-time bronchial effects.

The limitation for use in asthmatics is well established, but it should be noted that the list of cardiovascular medications under (S/P) gets longer and longer and now specifically



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