

Excipients in topical corticosteroid preparations in Canada

Gordon E. Searles, OD, MD
Jean-Pierre DesGroseilliers, MD, MSc, FRCPC

Topical corticosteroids are widely used for the treatment of dermatoses in Canada. The effects of the various nontherapeutic components of these formulations are less well known than those of the active ingredients and may cause adverse reactions. Information on the components is fragmentary and is scattered throughout the literature. We have attempted to consolidate this information into one source. Recent provincial legislation requiring the generic substitution of interchangeable products and the nondisclosure of all ingredients in product labelling hinder the search for an excipient that has caused an adverse reaction. Practitioner participation in the Cutaneous Adverse Reaction Registry of the Canadian Dermatology Association will identify sensitizing excipients and will support efforts by the profession to obtain more effective and safer products.

On prescrit beaucoup au Canada les préparations topiques de glucocorticoïdes dans le traitement des dermatoses. Mais on sait peu de chose des effets de leurs excipients, qui sont susceptibles de causer des réactions indésirables. L'in-

From the Division of Dermatology, Department of Medicine, Ottawa General Hospital, University of Ottawa

Dr. Searles is a third-year resident in internal medicine at the University of Ottawa and will be continuing his residency training, in dermatology, at the University of Alberta, Edmonton. Dr. DesGroseilliers is professor of dermatology at the University of Ottawa and director of training and evaluation at the Royal College of Physicians and Surgeons of Canada.

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Reprint requests to: Dr. Gordon E. Searles, Rm. 422, Newton Research Building, Department of Dermatology and Cutaneous Sciences, University of Alberta, Edmonton, Alta. T6G 2C2

formation concernant ces excipients est fragmentaire et se trouve dispersée dans la littérature, d'où nous avons tâché de la colliger. Les lois provinciales récentes portant substitution de produits considérés comme génériquement semblables et occultation de l'étiquette d'origine ont rendu fort difficile la découverte d'un excipient qui a pu causer une réaction indésirable. La participation des praticiens au registre des réactions cutanées de l'Association canadienne de dermatologie va conduire à la reconnaissance des excipients sensibilisateurs et épauler les efforts que fait la profession afin d'obtenir des produits plus efficaces et plus sûrs.

The use of topical corticosteroids in the middle of the 20th century did much to revolutionize the treatment of dermatologic conditions. The therapeutic effect of corticosteroids can only be fully realized if the drug is delivered to the appropriate site. Ingestion guarantees the drug's delivery, but the systemic side effects limit its usefulness. Much research has gone into the development of an effective topical vehicle that would maximize delivery to the affected area and minimize the systemic side effects commonly associated with oral preparations.

Manufacturers have produced an increasing array of potent corticosteroids in the hope that more of the steroid will reach the site and exert its action topically. This has led to an explosion of products on the market: there are over 113 preparations made by 36 manufacturers using more than 18 corticosteroids as active ingredients and thousands of substances as thickening agents, emulsifiers, buffers, antioxidants and preservatives. However, the actual percutaneous absorption is only about 1% to 2% of the applied dose.¹ In addition, the efficacy of preparations containing identical concentrations of active ingredient have varied widely.²

Pharmaceutical research has done much to improve the quality of topical corticosteroids. Research could be directed at improving the vehicles and enhancing percutaneous absorption, and it could explore the subtle effects of nonactive ingredients on steroid delivery to explain the diverse therapeutic effects of agents containing the same active ingredient. To this end the use of improved vehicles will greatly advance the bioavailability of corticosteroids and allow the use of less potent and safer compounds.

Another important aspect is the sensitizing potential of the excipients. There have been reports of adverse cutaneous reactions to such nonactive components as lanolin, methylparaben and propylparaben.³ The response is idiosyncratic and may occur after a long period of exposure. The search for the offending ingredient is tedious, but the results would guide selection of safer products.

Investigation of sensitizing agents has been greatly hindered in Canada for two reasons. First, some provinces have legislation that requires pharmacists to substitute products on the basis of the lowest available price. If a cutaneous reaction develops, the physician, the patient or the pharmacist may have difficulty in easily identifying the product or the excipient. The physician must contact the manufacturer directly to obtain the list of inactive ingredients so that patch testing can be performed.

Second, a drug manufacturer is not required to list all of the ingredients on the label or in the monograph. Information is supplied if the practitioner contacts the manufacturer or the Pharmaceutical Evaluation Division, Health Protection Branch, Department of National Health and Welfare. Currently, no single source exists in Canada that catalogues the active and inactive ingredients of all available preparations of topical corticosteroids.

Attempts have been made to help resolve these problems. The Canadian Dermatological Association (CDA) established the Cutaneous Adverse Reaction Registry. Since many drugs are licensed before enough experience has been obtained, postmarketing surveillance and reporting of adverse reactions are the only methods to identify potentially harmful substances. If a particular product or agent is found to be responsible for a substantial number of reactions the CDA will approach the manufacturer and the federal government to have the product modified or removed. In addition, the registry will serve as a resource when the federal government's full product disclosure regulations come into force. (The Health Protection Branch is currently negotiating with drug manufacturers to provide disclosure of all ingredients in their preparations.) Report forms for the registry are available from the CDA by writing either Johanne Brousseau, product manager, Lederle-Cyanamid Canada Inc., 88 McNabb St., Markham, Ont. L3R 6E6, or Dr. Gerald Sibbald, Ste. 10, 23-1077 North Service Rd., Mississauga, Ont. L4Y 1A6.

Because of the potential benefit of a compendium in investigating adverse reactions to topical corticosteroids all available information from pharmacopoeias, product monographs and pharmaceutical bulletins was compiled (Tables I and II). The preparations are grouped according to their active ingredient. Table II also provides the inactive ingredients. It is hoped that these lists will be of value to practising physicians, who may then select products that do not contain an identified sensitizer or will be aided in identifying, through systematic evaluation, potential sensitizers in a patient with an adverse reaction to a product. Although this compendium is as current as possible, inactive ingredients may change over time owing to alterations in the manufacturing process.

Table I — Topical corticosteroids with no published component information (and manufacturers)*

Beclomethasone dipropionate	Clobetasol 17-propionate	HC-Atropine Ophthalmic Ointment (Allen & Hanburys)
Beconase (Allen & Hanburys)	Dermovate (Glaxo)	Hycort (ICN)
Beconase-Aq (Allen & Hanburys)	Clobetasone 17-butyrate	Novohydrocort (Novopharm)
Propaderm (Allen & Hanburys)	Eumovate (Glaxo)	Otizol-HC (Nadeau)
Propaderm-C (Allen & Hanburys)	Desoximetasone	Proctosone (Technilab)
Betamethasone sodium phosphate	Topicort (Hoechst)	Rectocort (Welcker-Lyster)
Betnesol (Glaxo)	Flumethasone pivalate	Sopamycetin/HC (Charton)
Betamethasone valerate	Locacorten (CIBA)	Unicort (Allen & Hanburys)
Betacort Scalp Lotion (ICN)	Fluocinolone acetonide	Uremol-HC (Trans Canaderm)
Betnovate (Glaxo)	Fluolar (Riva)	Vioform Hydrocortisone (CIBA)
Celestoderm (Schering)	Fluonide (Technilab)	Methylprednisolone acetate
Celestone-S Eye Drops (Schering)	Trisyn (Syntex)	Neo-Medrol (Upjohn)
Ectosone Mild (Technilab)	Fluorometholone	Prednisolone
Ectosone Regular (Technilab)	FML Forte (Allergan)	Mydrapred (Alcon)
Ectosone Scalp Lotion (Technilab)	Hydrocortisone	Triamcinolone acetonide
Metaderm (Riva)	Actinac (Roussel)	Triamalone Pixcream (Trans Canaderm)
Novobetamet (Novopharm)	Calmurid HC (Pharmacia)	Trianide (Technilab)
Valisone-G (Schering)	Cortate (Schering)	
Valisone Scalp Lotion (Schering)	Cortisporin (Burroughs Wellcome)	

*The constituent vehicles are not disclosed by the manufacturer in any public source. Practitioners can contact the manufacturer (Appendix I) for this information.

Table II — Topical corticosteroids with published component information⁴⁻⁸

Active ingredient	Trade name	Vehicle	Excipients
Amcinonide	Cyclocort (Lederle)	Cream and lotion	Emulsifying wax, isopropyl palmitate, glycerin, sorbitol solution, lactic acid, benzyl alcohol, water
		Ointment	Emulsifying wax, benzyl alcohol, tennox II, white petrolatum
Betamethasone	Garasone Eye-Ear (Schering)	Ointment	White petrolatum, thimerosal
		Solution	Sodium biphosphate, sodium chloride, sodium citrate dihydrate, sodium borate, sodium phosphate, disodium edetate, benzalkonium chloride
Betamethasone benzoate	Beben (Parke-Davis)	Gel	Carbopol 934, propylene glycol, diisopropanolamine, disodium edetate, alcohol, water
Betamethasone dipropionate	Diprogen (Schering)	Cream	White petrolatum, mineral oil, cetomacrogol 1000, cetostearyl alcohol, sodium biphosphate, phosphoric acid, chlorocresol
		Ointment	White petrolatum, mineral oil
	Diprolene Cream (Schering)	Cream	Propylene glycol
	Diprolene Ointment (Schering)	Ointment	Propylene glycol, propylene glycol monostearate, white wax, white petrolatum
	Diprosalic (Schering)	Lotion	Isopropyl alcohol
Betamethasone valerate	Diprosone (Schering)	Ointment	White petrolatum, mineral oil
		Lotion	Isopropyl alcohol, carbopolymethylene, water
	Betaderm (Taro)	Ointment	Petrolatum, mineral oil
		Cream	Mineral oil, white petrolatum, polyethylene glycol 1000, polyoxyethylene stearyl-cetyl ether, cetyl-stearyl alcohol, propylene glycol, chlorocresol
Desonide	Tridesilon (Miles)	Ointment	Petrolatum, fractionated coconut oil, chlorocresol
		Cream	Glycerin, methylparaben, sodium lauryl sulfate, aluminum acetate, cetyl-stearyl alcohol, synthetic beeswax, white petrolatum, mineral oil, water
Dexamethasone	Ak-Dex (Akorn)	Ointment	White petrolatum
		Liquid	Benzalkonium chloride, sodium edetate, hydroxyethyl cellulose
	Decadron Eye-Ear (Merck Sharp & Dohme)	Liquid	Creatinine, sodium citrate, sodium borate, polysorbate 80, disodium edetate, hydrochloric acid, sodium bisulfite, phenylethanol, benzalkonium chloride, water
		Ointment	Lanolin, methylparaben, propylparaben, white petrolatum
	Maxidex (Alcon)	Suspension	Hydroxypropyl methylcellulose, benzalkonium chloride, disodium edetate
	Maxitrol (Alcon)	Ointment	Lanolin, methylparaben, propylparaben, white petrolatum
	Neo-Decadron (Merck Sharp & Dohme)	Liquid	Creatinine, sodium citrate, sodium borate, polysorbate 80, disodium edetate, hydrochloric acid, benzalkonium chloride, sodium bisulfite, water
Ointment		Plastibase 30W	
Diflucortolone valerate	Nerisone (Stiefel)	Cream	White petrolatum, paraffin, polyoxyl 40 stearate, stearyl alcohol, carbopol 934, disodium edetate, methylparaben, propylparaben
		Oily cream	White petrolatum, paraffin, white wax, dehumulus E
		Ointment	White petrolatum, paraffin, ceresine, hydrogenated castor oil
Diflorasone diacetate	Florone (Upjohn)	Cream	Propylene glycol, stearic acid, polysorbate 60, sorbitan monostearate, sorbitan mono-oleate, sorbic acid, citric acid, water
		Ointment	Arlamol E, stearic acid, Amerchol CAB, white petrolatum
	Flutone (Rorer)	Cream	Propylene glycol, stearic acid, polyoxyethylene 20 sorbitan monostearate, sorbitan monostearate, sorbitan mono-oleate, sorbic acid, citric acid, water
		Ointment	Arlamol E, stearic acid, Amerchol CAB, white petrolatum
Flunisolide	Rhinalar (Syntex)	Ointment	Propylene glycol, wool fat, white soft paraffin
		Solution	Propylene glycol, polyethylene glycol, citric acid, sodium citrate, benzalkonium chloride
Fluocinolone acetonide	Fluoderm (Taro)	Cream	Cetostearyl alcohol, propylene glycol, isopropyl myristate, eumulgin B-1, anoxid, citric acid, methylparaben, propylparaben
		Ointment	White petrolatum, fractionated coconut oil, methylparaben, propylparaben
	Lyderm (Taro)	Cream	Stearyl alcohol, polyethylene glycol 6000, propylene glycol, 1,2,6-hexanetriol, glycerin, citric acid
		Cream	Propylene glycol, stearyl alcohol, cetyl alcohol, polyoxyl 20 cetostearyl ether, methylparaben, propylparaben
	Synalar (Syntex)	Lotion	Ointment
Ointment			White petrolatum

Continued on next page

Active ingredient	Trade name	Vehicle	Excipients
Fluocinonide	Lidcomb (Syntex)	Cream	Propylene glycol, mineral oil, stearyl alcohol, cetyl alcohol, sorbitan monostearate, polysorbate 60, citric acid
	Lidemol (Syntex)	Cream	Propylene glycol, mineral oil, stearyl alcohol, cetyl alcohol, sorbitan monostearate, polysorbate 60, citric acid
	Lidex (Syntex)	Cream	Stearyl alcohol, polyethylene glycol 6000, propylene glycol, 1,2,6-hexanetriol, citric acid
	Topsyn (Syntex)	Ointment Gel	Amerchol CAB, white petrolatum, propylene carbonate, propylene glycol Propylene glycol, propyl gallate, disodium edetate, carbopol 940, sodium hydroxide, hydrochloric acid
Fluorometholone	FML Liquifilm (Allergan)	Liquid	Polyvinyl alcohol, benzalkonium chloride, disodium edetate, sodium chloride, monohydrate monobasic sodium phosphate, anhydrous dibasic sodium phosphate, polysorbate 80, sodium hydroxide
Flurandrenolide	Drenison (Lilly)	Cream	Stearic acid, cetyl alcohol, mineral oil, polyoxyl 40 stearate, propylene glycol, water
		Ointment Tape	White beeswax, cetyl alcohol, sorbitan sesquioleate, white petrolatum Acrylate ester, acrylic acid
Halcinonide	Halcicomb (Squibb)	Cream	White petrolatum, propylene glycol, promulgen, sorbitol solution, silicone fluid DC 200, sodium hydroxide, titanium dioxide, sodium citrate, citric acid, ethylenediamine, water
		Ointment	Plastibase
	Halog (Squibb)	Cream	Glyceryl monostearate, cetyl alcohol, cetyl esters wax, isopropyl palmitate, polysorbate 60, propylene glycol, water
		Lotion	Polyethylene glycol 300, disodium edetate dihydrate, butylated hydroxytoluene, water
Hydrocortisone	Anugesic-HC (Parke-Davis)	Ointment	Plastibase, polyethylene glycol, polysorbate 65, butylated hydroxytoluene
		Ointment	Zinc sulfate monohydrate, petrolatum, methylparaben, propylparaben
	Anusol-HC (Parke-Davis)	Ointment	Zinc sulfate monohydrate, petrolatum, methylparaben, propylparaben
		Cream	Dimethylpolysiloxane 20%, methylparaben, propylparaben
	Barriere-HC (Allen & Hanburys)	Cream	Dimethylpolysiloxane 20%, methylparaben, propylparaben
		Cream	Cetostearyl alcohol, fragrance, methylparaben, propylparaben, mineral oil, sodium lauryl sulfate, water
	Cortacet (Ayerst)	Cream	Cetostearyl alcohol, fragrance, methylparaben, propylparaben, mineral oil, sodium lauryl sulfate, water
		Ointment	Paraffin
	Cortamed (Berlex)	Ointment	Paraffin
		Suspension	Wool fat, white petrolatum, mineral oil
	Cortenema (Interfalk)	Suspension	Carboxypolyethylene, polysorbate 80, methylparaben
		Cream	Stearyl alcohol, soft petrolatum, propylene glycol
	Corticreme (Rougier)	Cream	Stearyl alcohol, soft petrolatum, propylene glycol
		Foam	Propylene glycol, ethoxylated stearyl alcohol, polyoxyethylene-10 stearyl ether, cetyl alcohol, methylparaben, propylparaben, triethanolamine, dichlorodifluoromethane, dichlorotetrafluoroethane, water
	Cortifoam (Reed & Carnrick)	Foam	Propylene glycol, ethoxylated stearyl alcohol, polyoxyethylene-10 stearyl ether, cetyl alcohol, methylparaben, propylparaben, triethanolamine, dichlorodifluoromethane, dichlorotetrafluoroethane, water
		Ointment	Polyethylene glycol
	Cortiment (Nordic)	Ointment	Petrolatum, fractionated coconut oil, methylparaben, propylparaben
		Ointment	Petrolatum, fractionated coconut oil, methylparaben, propylparaben
	Cortoderm (Taro)	Ointment	Petrolatum, fractionated coconut oil, methylparaben, propylparaben
		Cream	Mineral oil, cetyl alcohol, polyoxyl 40 stearate, propylene glycol, water
Emo-cort (Trans Canaderm)	Cream	Mineral oil, cetyl alcohol, polyoxyl 40 stearate, propylene glycol, water	
	Lotion	White beeswax, cetyl alcohol, sorbitan sesquioleate, white petrolatum	
Hemocort HC (Technilab)	Ointment	Zinc sulfate, petrolatum	
	Cream	Cetostearyl alcohol, sodium lauryl sulfate, propylene glycol, white petrolatum	
Hyderm (Taro)	Cream	Cetostearyl alcohol, sodium lauryl sulfate, propylene glycol, white petrolatum	
	Ointment	Butylparaben, methylparaben, white petrolatum, microcrystalline wax, mineral oil, cholesterol	
Neo-Cortef (Upjohn)	Ointment	Butylparaben, methylparaben, white petrolatum, microcrystalline wax, mineral oil, cholesterol	
	Ointment	Petrolatum	
Ophthocort (Parke-Davis)	Ointment	Petrolatum	
	Foam	Propylene glycol, ethoxylated stearyl alcohol, polyoxyethylene 10 stearyl ether, cetyl alcohol, methylparaben, propylparaben, triethanolamine, water, propellants	
Protofoam-HC (Reed & Carnrick)	Foam	Propylene glycol, ethoxylated stearyl alcohol, polyoxyethylene 10 stearyl ether, cetyl alcohol, methylparaben, propylparaben, triethanolamine, water, propellants	
	Ointment	Anhydrous lanolin	
Proctosedyl (Roussel)	Ointment	Anhydrous lanolin	
	Liquid	Methylparaben, propylparaben, sodium thiosulfate, polysorbate 80	
Vasocidin (Iolab)	Liquid	Methylparaben, propylparaben, sodium thiosulfate, polysorbate 80	
	Liquid	Methylparaben, propylparaben, sodium thiosulfate, polysorbate 80	

Active ingredient	Trade name	Vehicle	Excipients
Medrysone	HMS Liquifilm (Allergan)	Liquid	Polyvinyl alcohol, benzalkonium chloride, disodium edetate, sodium chloride, potassium chloride, monohydrate monobasic sodium phosphate, anhydrous dibasic sodium phosphate, methylcellulose, water, sodium hydroxide, hydrochloric acid
Methylpred-nisolone acetate	Medrol Acne Lotion (Upjohn)	Lotion	Aluminum chlorhydroxide, butylparaben, methylparaben
Prednisolone	Ak-cide (Akorn)	Liquid	Benzalkonium chloride, Tween 80, hydroxyethyl cellulose, sodium thiosulfate
	Ak-Tate (Akorn)	Liquid	Benzalkonium chloride, sodium chloride, sodium citrate, boric acid, hydroxyethyl cellulose, polysorbate 80, sodium bisulfite, disodium edetate
	Blephamide (Allergan)	Liquid	Polyvinyl alcohol, phenylmercuric nitrate, polysorbate 80, antipyrine, disodium edetate, monohydrate monobasic sodium phosphate, anhydrous dibasic sodium phosphate, sodium thiosulfate, water, hydrochloric acid
	Inflamase (Iolab)	Solution	Disodium edetate, sodium phosphate, disodium phosphate, sodium chloride, benzalkonium chloride
	Isopto Cetapred (Alcon)	Liquid	Hydroxypropyl methylcellulose, benzalkonium chloride, methylparaben, propylparaben
	Metimyd (Schering)	Suspension	Phenylethyl alcohol, benzalkonium chloride
	Pred Forte and Mild (Allergan)	Liquid	Benzalkonium chloride, polysorbate 80, boric acid, sodium citrate, sodium bisulfite, sodium chloride, disodium edetate, hydroxypropyl methylcellulose, water
	Vasocidin Eye-Ear Solution (Iolab)	Liquid	Methylparaben, propylparaben, sodium thiosulfate, polysorbate 80
	Triamcinolone acetonide	Aristocort (Lederle)	Cream
		Ointment	White petrolatum
Aristoform (Lederle)		Cream	Polawax, squalane, glycerin, sorbitol solution, methylparaben, propylparaben, potassium sorbate
Aureocort (Lederle)		Ointment	Anhydrous wool fat, white soft paraffin, methylparaben, propylparaben
Kenacomb (Squibb)		Cream	Polysorbate 60, alcohol, aluminum hydroxide wet gel, titanium dioxide, silicone fluid, propylene glycol, ethylenediamine, hydrochloric acid, white petrolatum, polyoxyethylene fatty alcohol ether, methylparaben, propylparaben, sorbitol solution
		Ointment	Plastibase
Kenalog (Squibb)		Aerosol	Nonvolatile vehicle
		Cream	Propylene glycol, polyoxyethylene fatty alcohol ether, white petrolatum, sorbitol, water
		Ointment	Plastibase
Triaderm (Taro)		Cream	Cetyl alcohol, propylene glycol, glyceryl monostearate, isopropyl palmitate, spermaceti monostearate, polyoxyethylene sorbitan monostearate
Viaderm-KC (Taro)		Ointment	Petrolatum, fractionated coconut oil, methylparaben, propylparaben
		Cream	Polysorbate 60, aluminum hydroxide wet gel, titanium dioxide, silicone fluid, propylene glycol, ethylene diamine, hydrochloric acid, white petrolatum, polyoxyethylene fatty alcohol ether, methylparaben, propylparaben, sorbic acids, sorbitol solution, glyceryl monostearate, polyethylene glycol-400 monostearate
	Ointment	Petrolatum, mineral oil gel	

Therefore, if there is concern about a product, physicians should contact the manufacturer directly to verify the components (Appendix I).

Patch testing can be accurately performed given the proper tools and methods of examination.^{3,7,8}

In the meantime, open communication between manufacturers, government and practition-

ers is necessary to provide the best available care for patients with the safest and most effective products.

References

1. Franz TJ: Kinetics of cutaneous drug penetration. *Int J*

- Dermatol* 1983; 22: 499-505
2. Stoughton RB: Are generic formulations equivalent to brand name topical glucocorticosteroids? *Arch Dermatol* 1987; 123: 1312-1314
 3. Fisher AA: *Contact Dermatitis*, 3rd ed, Lea & Febiger, Philadelphia, 1986: 9-29
 4. Krogh CME (ed): *Compendium of Pharmaceuticals and Specialties*, 23rd ed, Canadian Pharmaceutical Association, Ottawa, 1988
 5. Montgomery H: *Drugs in Dermatology. Physicians' Reference Manual*, STA Communications Inc, Pointe Claire, PQ, 1985
 6. Osol A (ed): *Remington's Pharmaceutical Science*, 16th ed, Mack Pub, Easton, Penn, 1980
 7. Calnan CD: The use and abuse of patch tests. In Maibach HI, Gellin GA (eds): *Occupational and Industrial Dermatology*, Year Bk Med, Chicago, 1982: 35-39
 8. Sulzberger MB: The patch test: who should and should not use it and why. *Contact Dermatitis* 1975; 1: 117

Appendix I — Names and addresses of manufacturers of topical corticosteroids

Akorn Pharmaceuticals Canada Inc. 826 Main St. E Hamilton, Ont. L8M 1L6; (416) 547-9377	ICN Canada Ltd. 1956, rue Bourdon Montreal, PQ H4M 1V1; (514) 744-6792	Pharmacia (Canada) Inc. 2044, boul. Saint-Régis Dorval, PQ H9P 1H6; (514) 684-8881
Alcon Canada Inc. 6500 Kitimat Rd. Mississauga, Ont. L5N 2B8; (416) 826-6700	Interfalk Canada Inc. 587, Place Choquette Mont St-Hilaire, PQ J3H 3Z6; (514) 467-5138	Reed & Carnrick 36 Northline Rd. Toronto, Ont. M4B 3E3; (416) 755-1080
Allen & Hanburys 1025 The Queensway Toronto, Ont. M8Z 5S6; (416) 252-2281	Iolab Pharmaceuticals 100-1210 Sheppard Ave. Willowdale, Ont. M2K 2S6; (416) 491-3300	Regal Pharmaceutical and Surgical Supply Company Limited 900 Harrington Court Burlington, Ont. L7N 3N4; (416) 827-3781
Allergan Inc. 441W-2255 Sheppard Ave. E Willowdale, Ont. M2J 4Y3; (416) 494-6730	Lederle-Cyanamid Canada Inc. 88 McNabb St. Markham, Ont. L3R 6E6; (416) 293-8181	Riva Ltée, Laboratoires 2241, rue de la Métropole Longueuil, PQ J4G 1S5; (514) 522-2307
Ayerst Laboratories 1025, boul. Laurentien Montreal, PQ H4R 1J6; (514) 744-6771	Eli Lilly Canada Inc. 3650 Danforth Ave. Scarborough, Ont. M1N 2E8; (416) 694-3221	Rorer Canada Inc. 130 East Dr. Bramalea, Ont. L6T 1C3; (416) 792-1212
Berlex Canada Inc. 2260-32e Ave. Lachine, PQ H8T 3H4; (514) 631-7400	Merck Sharp & Dohme Canada PO Box 1005 Pointe-Claire-Dorval, PQ H9R 4P8; (514) 695-7550	Rougier Inc. 8480, boul. Saint-Laurent Montreal, PQ H2P 2M6; (514) 381-5631
Burroughs Wellcome Inc. 16751, rte. Transcanadienne Kirkland, PQ H9H 4J4; (514) 694-8220	Miles Pharmaceuticals 77 Belfield Rd. Etobicoke, Ont. M9W 1G6; (416) 248-0771	Roussel Canada Inc. 4045, ch. Côte Vertu Montreal, PQ H4R 2E8; (514) 333-2900
Charton Laboratories 9393, boul. Louis-H.-Lafontaine Montreal, PQ H1J 1Y8; (514) 353-8950	Nadeau Laboratory Limited 8480, boul. Saint-Laurent Montreal, PQ H2P 2M6; (514) 381-5631	Schering Canada Inc. 3535, rte. Transcanadienne Pointe-Claire, PQ H9R 1B4; (514) 695-1320
CIBA Pharmaceuticals 6860 Century Ave. Mississauga, Ont. L5N 2W5; (416) 821-4420	Nordic Scientific 16700, rte. Transcanadienne Kirkland, PQ H9H 4M7; (514) 694-9690	Squibb Canada Inc. 2365, ch. Côte-de-Liesse Montreal, PQ H4N 2M7; (514) 331-7423
Glaxo Laboratories 1025 The Queensway Toronto, Ont. M8Z 5S6; (416) 252-2281	Novopharm Limited 1290 Ellesmere Rd. Scarborough, Ont. M1P 2Y1; (416) 291-8876	Stiefel Canada Inc. 6635, boul. Henri-Bourassa ouest Montreal, PQ H4R 1E1; (514) 332-3800
Hoechst Canada Inc. 4045, ch. Côte Vertu Montreal, PQ H4R 1R6; (514) 333-3500	Parke-Davis Canada Inc. PO Box 2200, Stn. A Scarborough, Ont. M1K 5C9; (416) 288-2200	Syntex Inc. 2100 Syntex Court Mississauga, Ont. L5N 3X4; (416) 821-4000

Taro Pharmaceuticals Inc.
305 Supertest Rd.
Downsview, Ont.
M3J 2M4; (416) 661-0044

Trans Canaderm Inc.
5353, boul. Thimens
Saint-Laurent, PQ
H4R 2H4; (514) 334-3830

Welcker-Lyster Ltd.
8480, boul. Saint-Laurent
Montreal, PQ
H2P 2M6; (514) 381-5631

Technilab Inc.
1490, rue Beaulac
Ville Saint-Laurent, PQ
H4R 1R7; (514) 337-6030

The Upjohn Company of Canada
865 York Mills Rd.
Don Mills, Ont.
M3B 1Y6; (416) 441-9600

Westwood Pharmaceuticals
200 College St. E
Belleville, Ont.
K8N 5E9; (613) 966-4501

Upcoming Meetings *continued from page 392*

Oct. 12-14, 1989: Urologic Oncology, Today and Tomorrow (in cooperation with the University of Toronto, Toronto Hospital and the US National Institutes of Health)

Metro Toronto Convention Centre

Credits: 19 hours, category 1, American Urological Association

Jeanie McGoldrick, Stratagem Communication, 604-2 Sheppard Ave. E, Willowdale, Ont. M2N 5Y7; (416) 229-2331, FAX (416) 229-6443

Oct. 13-14, 1989: Arthritis Health Professions Association Annual Conference: War Games Versus Teamwork — a Positive Approach to Problem Solving

Glenway Country Club, Newmarket, Ont.

Dr. J. Carter Thorne or Ieva Fraser, York County Hospital, 596 Davis Dr., Newmarket, Ont. L3Y 2P9; (416) 895-4521, ext. 2299

Oct. 14, 1989: "Hands-On" ENT for the Family Physician

Le Meridien Hotel, Vancouver

Continuing Medical Education, 105-2194 Health Sciences Mall, University of British Columbia, Vancouver, BC V6T 1W5; (604) 228-2626

Oct. 16-17, 1989: Cardiopulmonary Monitoring of the Critically Ill Patient

Royal York Hotel, Toronto

Conference and Seminar Services, Humber College Professional Services, 205 Humber College Blvd., Etobicoke, Ont. M9W 5L7; (416) 675-5077, FAX (416) 675-0135

Oct. 16-17, 1989: Focus on Patient Assessment
Hotel Beausejour, Moncton, NB

Maggie Swithenbank, program manager, Conference and Seminar Services, Humber College Professional Services, 205 Humber College Blvd., Etobicoke, Ont. M9W 5L7, (416) 675-5077, FAX (416) 675-0135; or Gwen Villamere, chairperson, Continuing Education in Nursing, (416) 249-8301

Oct. 18-20, 1989: Quality Assurance in Health Care
World Trade and Convention Centre, Halifax

Ingrid Norrish, director, Conference and Seminar Services, Humber College Professional Services, 205 Humber College Blvd., Etobicoke, Ont. M9W 5L7; (416) 675-5077, FAX (416) 675-0135

Oct. 19-20, 1989: Psychiatric Occupational Therapy: Preparing for the '90s

Clarke Institute of Psychiatry, Toronto

Patti Pettit or Marge Murphy, Education Office, Clarke Institute of Psychiatry, 250 College St., Toronto, Ont. M5T 1R8; (416) 979-6845

Oct. 19-21, 1989: Learning Disabilities Association of Canada 7th National Conference: Lighting the Way
Hotel Newfoundland, St. John's

Judy Davis, conference coordinator, 12 Colville St., St. John's, Nfld. A1E 3J8; (709) 739-0611 or (709) 579-7273

Oct. 19-21, 1989: Practical Orthopaedics for the Primary Care Physician

Sheraton Cavalier and Theatre in the Mall, University Hospital, Saskatoon

Continuing Medical Education Office, University Hospital, Saskatoon, Sask. S7N 0X0

Oct. 20, 1989: La Leche League Manitoba Conference: Controversies in Breastfeeding

St. Boniface Hospital Research Centre, Winnipeg
Credits: 5 hours, CFPC

Leslie Sanders, 321 Marlton Cr., Winnipeg, Man. R3R 1A6; (204) 832-4180

Oct. 20, 1989: University of Western Ontario's Research Day IV in Family Medicine

Sheraton Armouries Hotel, London, Ont.

Mrs. Toulia Gerace or Dr. John Sangster, Byron Family Medical Centre, 1228 Commissioners Rd. W, London, Ont. N6K 1C7; (519) 472-9670

Oct. 21, 1989: Dermatology Update 1989 for Family Physicians

University Hospital, Shaughnessy Site, Vancouver

Continuing Medical Education, 105-2194 Health Sciences Mall, University of British Columbia, Vancouver, BC V6T 1W5; (604) 228-2626

Oct. 22-24, 1989: Canadian Medical Society on Alcohol and Other Drugs 1st Annual Meeting (in association with the University of Calgary and the Alberta Alcohol and Drug Abuse Commission)

Delta Bow Valley Hotel, Calgary

Madeleine Aldridge, assistant manager, Conference Office, University of Calgary Faculty of Continuing Education, Education Tower, 102-2500 University Dr. NW, Calgary, Alta. T2N 1N4; (403) 220-5051, FAX (403) 282-7298

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