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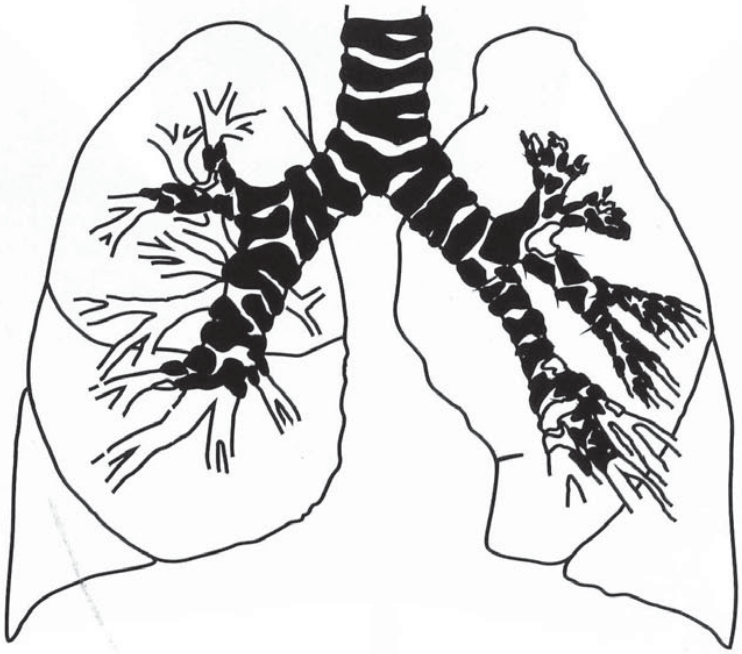

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CANADIAN RESPIRATORY JOURNAL

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UPDATE IN ASTHMA

DEPARTMENTS

New delivery systems and propellants

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M Dolovich. New delivery systems and propellants. Can Respir J 1999;6(3):290-295.

The removal of chlorofluorocarbon (CFC) propellants from industrial and household products has been agreed to by over 165 countires of which more than 135 are developing countries. The timetable for this process is outlined in the *Montreal Protocol on Substances that Deplete the Ozone Layer* document and in several subsequent amendments. Pressured metered dose inhalers (pMDIs) for medical use have been granted temporary exemptions until replacement formulations, providing the same medication via the same route, and with the same efficacy and safety profiles, are approved for human use. Hydrofluoroalkanes (HFAs) are the alternative propellants for CFCs-12 and -114. Their potential for damage to the ozone layer is nonexistent, and while they are greenhouse gases, their global warming potential is a fraction (one-tenth) of that of CFCs. Replacement formulations for almost all inhalant respiratory medications have been or are being produced and tested; in Canada, it is anticipated that the transition to these HFA or CFC-free pMDIs will be complete by the year 2005. Initially, an HFA pMDI was to be equivalent to the CFC pMDI being replaced, in terms of aerosol properties and effective clinical dose. However, this will not necessarily be the situation, particularly for some corticosteroid products. Currently, only one CFC-free formulation is available in Canada – Airomir, a HFA salbutamol pMDI. This paper discusses the in vitro aerosol characteristics, in vivo deposition and clinical data for several HFA pMDIs for which there are data available in the literature. Alternative delivery systems to the pMDI, namely, dry powder inhalers and nebulizers, are briefly reviewed.

Key Words: *Aerosol delivery devices; Beclomethasone; HFA propellants; Metered-dose inhalers; Montreal Protocol; Salbutamol*

Nouveaux dispositifs de délivrance des médicaments et gaz de substitution

RÉSUMÉ : Le retrait des produits domestiques et industriels des propulseurs contenant des chlorofluorocarbones (CFC) a été approuvé par plus de 165 pays dont plus de 135 sont des pays en voie de développement. L'échéancier de ce processus est présenté dans le document intitulé *Protocole de Montréal relatif à des substances qui appauvrissent la couche d'ozone* et dans plusieurs de ses amendements subséquents. Les aérosols-doseurs à usage médical ont été temporairement exemptés jusqu'à ce que des formules de substitution, fournissant le même médicament par la même voie d'administration, et avec les mêmes profils d'efficacité et d'innocuité, soient approuvées pour utilisation chez l'humain. Les hydrofluoroalkanes (HFA) ont été choisis comme gaz de substitution des CFC-12 et CFC-114. Leur potentiel d'appauvrissement de la couche d'ozone est inexistant, et alors qu'ils sont des gaz à effet de serre, leur potentiel global de réchauffement représente une fraction (un dixième) de celui des CFC. Des formules de substitution pour presque tous les médicaments respiratoires administrés par inhalation ont été et sont testées. Au Canada, on espère que la transition vers ces aérosols-doseurs générés aux HFA ou ne contenant pas de CFC sera terminée vers 2005. Initialement, un aérosol-doseur généré par HFA devait être équivalent à l'aérosol-doseur généré par CFC que l'on remplaçait, relativement aux propriétés de l'aérosol et à la dose clinique efficace. Cependant, ce ne sera pas nécessairement le cas, en particulier pour certains produits contenant des corticostéroïdes. Actuellement, une seule formulation sans CFC est disponible au Canada – Airomir, un aérosol-doseur contenant du salbutamol et généré par HFA. Le présent article discute des caractéristiques de l'aérosol *in vitro* et du dépôt *in vivo*, et des données cliniques obtenues sur plusieurs aérosols-doseurs générés par HFA et sur lesquels des données sont disponibles dans la littérature. L'alternative aux aérosols-doseurs, à savoir, les inhalateurs à poudre sèche et les nébuliseurs, sont brièvement passés en revue.

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