Bioavailability of salbutamol

We read with interest the paper of Hindle and Chrystyn (May 1994, 49:549-53) in which the lung bioavailability of salbutamol (Ventolin, Allen & Hanbursys, UK) was augmented within 30 min of inhalation of salbutamol, peak levels occur within five minutes of inhalation, in keeping with rapid lung absorption, and it is this which will therefore largely determine systemic β₂-mediated effects of salbutamol. On the basis of the data of Hindle et al one might predict that the use of the Nebuhaler should increase the systemic β₂ effects of salbutamol in comparison with a metered dose inhaler. This was not found to be the case, however, in the study where systemic β₂ responses to cumulative doubling doses of salbutamol (100-2000 μg) were compared in normal subjects using a metered dose inhaler and Nebuhaler as no differences were seen between the systemic dose-response methods. The findings cannot be extrapolated between the two studies, the inference is that measurements of 30 minute urinary salbutamol excretion may not be a true reflection of lung bioavailability, which may be directly measured using peak plasma concentration. Indeed, this is supported by a study in which the increased plasma salbutamol concentration with a modified actuator device compared with a metered dose inhaler was associated with a left shift in the dose-response curve for a number of β₂-mediated systemic effects.

There have been recent concerns regarding the bioequivalence of generic salbutamol metered dose formulations, particularly with regard to safety evaluation in terms of systemic β₂ effects. Thus, if it is required to quantify the systemic bioequivalence of generic inhaled salbutamol formulations, the use of direct pharmacokinetic evaluation of lung bioavailability using plasma salbutamol concentration along with measurement of systemic β₂ responses may be more applicable than using an indirect surrogate pharmacokinetic parameter such as 30 minute urinary salbutamol excretion.

B. J. LIPWORTH

A GROVE

Department of Pharmacology and Therapeutics, University of Dundee, Ninewells Hospital and Medical School, Dundee DD1 9SY, UK


H. CHRYSTYN

Professor of Pharmacy Practice, University of Bradford, Bradford BD7 1DJ, UK


