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New Concepts in Administration of Drugs in Tablet Form

*Formulation and Evaluation of a Sublingual Tablet for Rapid
Absorption, and Presentation of an Individualised Dose
Administration System*

BY

SUSANNE BREDEBERG



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ABSTRACT

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This thesis presents two new concepts in oral drug administration and the results of evaluation of some relevant formulation factors.

Investigation into improving the homogeneity of mixtures for tableting indicated that it may be possible to obtain interactive dry mixtures of micronised drugs containing drug proportions as low as 0.015% w/w. By studying the relationship between disintegration time and tensile strength, it was found that the microstructure surrounding the disintegrant particles may influence the disintegration process. Therefore, avoidance of excipients which are highly deformable or very soluble in water will result in more rapid disintegration. Further, it is possible to increase the bioadhesive properties of a non-bioadhesive carrier material by forming interactive mixtures containing a fine particulate bioadhesive material.

The new sublingual tablet concept presented is based on interactive mixtures consisting of a water-soluble carrier covered with fine drug particles and a bioadhesive component. With this approach, it is possible to obtain rapid dissolution in combination with bioadhesive retention of the drug in the oral cavity. Clinical data indicate that this allows rapid sublingual absorption while simultaneously avoiding intestinal absorption.

An individualised dose administration system is also presented. This system is based on the use of standardised units (microtablets), each containing a sub-therapeutic amount of the active ingredient. The required dose is fine-tuned by electronically counting out a specific number of these units using an automatic dose dispenser. A patient handling study supported the suggestion that the dosage of some medications can be more easily and safely individualised for each patient with this method than by using traditional methods of mixing different standard tablet strengths or dividing tablets.

Susanne Bredenberg, Department of Pharmacy, Uppsala Biomedical Centre, Box 580, SE-751 23 Uppsala, Sweden

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