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# 4th PHARMACEUTICAL TECHNOLOGY CONFERENCE

## 10 - 12th April 1984, Edinburgh, Scotland

Participants from nearly 30 countries attended the biannual 4th Pharmaceutical Technology Conference at the University of Edinburgh from the 10th to 12th April 1984 to review current developments in pharmaceutical technology. The Conference was again organised by the Solid Dosage Research Unit and a new feature of the 1984 meeting was the inclusion of an Exhibition at which delegates were able to view the latest equipment and materials and to discuss their requirements directly with exhibiting manufacturers.

The Conference included a number of plenary lectures by acknowledged international experts which was followed by the presentation of a large number of original research papers. Some of the papers presented at this important Conference are reproduced in this and the next issue of 'Drug Development & Industrial Pharmacy'.

Professor A H Beckett (University of London) delivered the first plenary lecture entitled "Philosophy and Practice in Controlled Drug Release Technology". He explained why he felt that multiparticulate controlled release preparations have large therapeutic advantages over single entity systems and went on to point out that there was a need to monitor dissolution rates at various pHs and at longer periods of time. This interesting and forthright lecture was followed by the presentation of a number of research papers concerned with controlled drug release. The release kinetics of griseofulvin from coprecipitates with phospholipids was shown to correlate with the phase transition temperature of the various phosphalidylcholines by S Venkataram (University of Alberta). The physicochemical characteristics of biodegradable microspheres containing quinidine sulphate were determined by J W McGinity and co-workers at the Drug Dynamics Institute, Texas, U.S.A. Excellent reproducibility in release characteristics from the molecular dispersion in the poly(lactic acid) polymer system was achieved with approximately 76% of the drug being released after 12 days in the dissolution medium. The loading of griseofulvin on hydrophilic cross-linked polyvinylpyrrolidone improved the wettability and diss-

olution properties of the drug according to the work carried out by F Carli (Farmitlia Carlo Erba, Milan). From the University of Kuopio, Finland, A Urtti showed that the ocular administration of pilocarpine could be prolonged using a solid matrix in a hydrophobic gel. The miotic activity of the system was measured in rabbits eyes and it was found that despite in- vitro differences the time course of miotic response did not vary between different polymer matrices.

Tableting technology featured prominently at the Conference and newer methods for characterising the compression process were discussed. For the prediction of the compressibility of materials, M Celik & D N Travers (Leicester Polytechnic, UK) used an elastic recovery index. This index was obtained from measurements of computer-logged strain movements at constant stress. These authors, together with M E Aulton, also examined the viscoelastic deformation of various tableting materials, both during and after tablet compression. Measurement of punch movement was used to assess viscoelasticity as well as a technique that measured the penetration of an indenter into preformed compacts. The two methods were found to produce similar results. Post-compaction pressure decay and punch displacement were measured simultaneously by I M Jackson, F Ridgway and M H Rubinstein (E R Squibb & Sons and Liverpool Polytechnic, UK). They found that post-compaction plastic flow and pressure decay were directly related as reflected in the displacement measurement; significant reductions in axial dimensions ocurred both in the short term (15 - 30 secs.) and over extended monitoring times. A flexure test for assessing the mechanical properties of tablets was described by M S Church (Nottingham University, UK). The test utilised a novel four-point bending technique and it was suggested that this method produces a more uniform, uniaxial tensile stress than the diametral compression test.

A plenary lecture on recent advances in granulation technology and equipment was presented by Curt Appelgren (Lejus Medical AB, Sweden). He reviewed the disadvantages of many of the pieces of granulation equipment in common use and explained how newer engineering design features could overcome these problems. This lecture was followed by a number of papers dealing with optimising the granulation process. A Stamm (Faculté de Pharmacie, Strasbourg, France) used a power consumption technique to monitor the granulation process and studied several factors including granulation liquid flow rate and quatity, mixer speed and sieve massing size. Y. Nozawa (Shizuoka College of Pharmacy, Japan) investigated the effect of different methods of granulation

on the content uniformity of drugs. It was shown that a new device, called a pneumatic transport system, produced smaller drug content deviation than other fluid bed granulation systems investigated. N-O Lindberg (Draco AB, Sweden) described how his company were using a recording "Diosna P25" mixer/granulator to monitor suitable limits for the end-point determination of the granulation process. The main variables were found to be the volume of granulating fluid and the impellor speeds.

The mechanism of tablet and capsule disintegration continues to attract attention. C Caramella (University of Pavia, Italy) discussed the role of swelling in the disintegration process, concluding that swelling was the dominant factor for a large number of disintegrants. The relationship between disintegrant swelling, pore diameter and drug release rate for loosely packed beds in hard gelatin capsules was the subject of work carried out at the University of Antwerp by A Ludwig and co-workers. Again it was found that swelling of the disintegrant was very important. Some novel and interesting work on the effect of recompression on disintegrant efficiency of tablets was presented by P L Gould (Pfizer Central Research, Sandwich, UK). Three disintegrants were studied. 'Explotab', 'Ac-Di-Sol' and 'Polyplasdone XL'. All disintegrants incorporated intragranularly had rework efficiencies that were essentially the same as the control. When the disintegrants were placed extragranularly it was found, however, that only 'Explotab' retained good efficiency after rework.

A very timely plenary lecture was presented by J L Ford (Liverpool Polytechnic, UK) on recent advances in solid dispersion technology. Dr Ford reviewed our current understanding of solid dispersions and the influence of drug:carrier ratio was stressed. Despite research on over 30 carriers, only 2 were considered suitable, namely polyethylene glycol and polyvinylpyrrolidone. Two general methods of preparation are available: the melt methods are limited by the need for a low melting point, thermally stable carrier, whereas solvent methods are often complicated by the selection of a solvent common to both drug and carrier, and its subsequent removal. Although the ratio of drug to carrier used may be influenced by stability considerations, generally optimum dissolution rate increases are obtained with dispersions containing a low proportion of drug, since these systems display only slow age-induced changes. Dr O I Corrigan (Trinity College, Dublin) further emphasized the state of solid dispersion technology with a presentation reviewing the mechanisms of dissolution of fast release solid dispersions. In a further paper, he showed that indomethacin could be co-spray dried with

povidone to produce a fused amorphous solid with very fast dissolution characteristics.

Newer direct compression excipients were desribed in three presentations. The technological and biopharmaceutical properties of γ- sorbitol in tablet formulations were investigated by A M Guyot-Hermann (Faculte de Pharmacie, Lille, France). Good compression properties were found with this material, which may have potential as an alternative to other direct compression vehicles. H V Van-Kemp (University of Groningen, Holland) propounded the advantages of α-lactose as a new direct compression excipient, whilst R Parvez (Edward Mendell, U.S.A.) evaluated α-cellulose and found this substance to be equal to, and in many cases superior to, microcrystalline cellulose as a direct compression vehicle.

The Conference reflected the newest advances in the broad area of pharmaceutical technology and provided participants with extensive research and development information for use in their own laboratories. The very high standard of the presentations ensured the excellence of the meeting and coupled with the social programme made the Conference an outstanding success. The International Advisory Board are already planning the 5th Pharmaceutical Technology Conference for April 1986 and the favoured venue is Guernsey in the channel islands.