# THE TENSILE STRENGTH OF ASPIRIN-ENCOMPRESS TABLETS

G.D. Cook and M.P. Summers, Dept. of Pharmaceutics, The School of Pharmacy, 29/39 Brunswick Square, London WC1N 1AX

Newton et al (1977) reported that the tensile strength of tablets could be increased by mixing ingredients. However, the inclusion of Magnesium Stearate in their mixtures could have affected their results because lubricants weaken tablets made from materials which consolidate by plastic deformation to a greater extent than those consolidating by fragmentation (De Boer et al 1978). In this study several tablet properties have been investigated in attempts to explain the change in tensile strength with composition of tablets containing Aspirin and Emcompress only.

The 90-125μm sieve fractions of ball-milled Aspirin and unmilled Emcompress were blended in various proportions using a miniature Y-cone mixer and shown to be homogeneous by determination of the Aspirin content. All powders were conditioned at 43%rh, 20°C for at least two weeks before use. Sufficient powder to give tablets 3mm thick at zero porosity was compressed using an instrumented Manesty E2 single punch tablet machine to several maximum upper punch pressures. Before each compaction the die wall was lubricated with a 5%w/v solution of stearic acid in chloroform. After storing for 7 days at 43%rh, 20° C tablet dimensions were measured to 0.01mm using a dial micrometer, weight measured to 0.1mg and the diametral tensile strength determined.

Figures 1&2 show results for tablets prepared at 75 MPa compaction pressure. Similar results were found at other pressures. Each point is the mean value of 5 tablets. A marked peak occurs in the tensile strength-composition curve (Fig 1). Since porosity (Fig 1) and lower punch work (LPW1, defined by Krycer et al 1982) in figure 2 show nearly linear relationships with composition, changes in these factors do not appear to explain this increase in strength.

Fig. 1

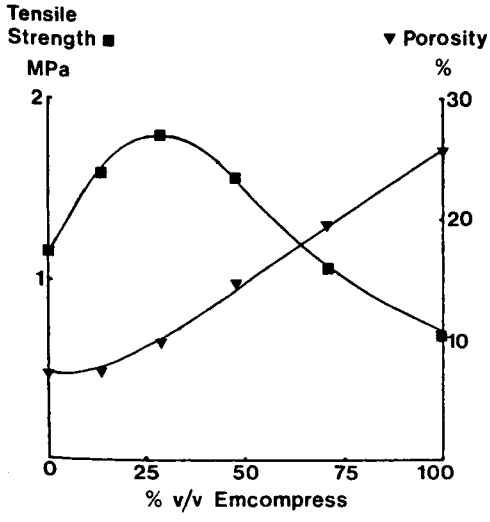
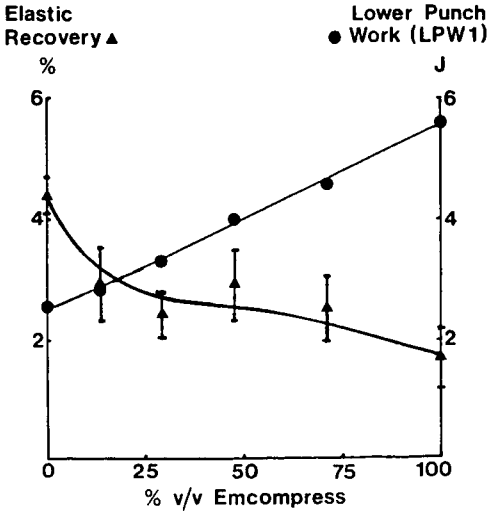



Fig. 2




Newton, J.M. et al (1977) J. Pharm. Pharmacol. 29: 247-249
De Boer, A.H. et al (1978) Powder Technol. 20: 75-82
Krycer, I. et al (1982) Int. J. Pharm. 12: 113-134