

### **Tablet Strength Testing**

The paper of Bavitz *et al.*<sup>1</sup>, comparing different instruments which determine the strength of tablets, demonstrates the use of statistical methods to draw conclusions from experiments in which the basic principles of the system are unknown. Such a paper would be valuable if nothing were known about the failure of tablets when subjected to the diametral crushing of these instruments. It has been, however, clearly established that the mechanism of failure depends on the loading conditions<sup>2</sup>. Tablets can fail by shear, compression, tension, or a mixture of these mechanisms. Under the correct loading condition, it can be ensured that tension is the major mechanism of failure<sup>2</sup>. If the correct conditions are not provided, failure occurs by a complex mixture of the three mechanisms. With sensitive instruments such as the Instron, the failure in tension results in values of the breaking load which have greater reproducibility than when failure occurs by mixed mechanisms<sup>2</sup>.

No mention is made by Bavitz *et al.*<sup>1</sup> as to the mechanism of failure of the tablets. The instruments tested invariably do not ensure tensile failure; hence, one might expect to obtain poor

reproducibility. The limited variation reported by Bavitz *et al.*<sup>1</sup> appears to contradict this concept. It is my experience that the reproducibility reflects the insensitivity of the tablet strength testers. Thus the test systems are inadequate on two counts. I suggest, therefore, that the work of Bavitz *et al.*<sup>1</sup> is misplaced. Greater benefit could be achieved by placing the effort behind the design and testing of an instrument that would ensure that the tablets failed in tension and provided an accurate estimate of the breaking load. Comparisons of instruments would then be unnecessary.

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Received December 31, 1973.

<sup>1</sup>J. F. Bavitz, N. R. Bohidar, J. I. Karj, and F. A. Restaino, *J. Pharm. Sci.*, **62**, 1520(1973).

<sup>2</sup>J. T. Fell and J. M. Newton, *ibid.*, **59**, 688(1970).