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DISSOLUTION TEST BLOSSOMS

The USP Executive Committee is to be highly commended for its decisive action announced early this year, in adopting a policy to establish a dissolution test requirement for all USP and NF tablets and capsules. This action was a long time in coming and had to clear a multitude of major hurdles prior to its approval.

The history of the dissolution test could probably be traced back to 1961 when the first rumblings were heard that the tablet disintegration test, which at that time was a general requirement in USP and NF monographs, was not serving as effectively as had been generally assumed. Probably the earliest reports on this subject appeared in this Journal and came from pharmacy school research laboratories in San Francisco and Buffalo.

Initial efforts were directed at modifications of the disintegration test equipment, the test conditions, and the time limits. Although some significant improvement resulted, it became evident that—at least in the case of some drugs or some formulations—a more sophisticated type of test procedure was needed. By the mid-1960's, a number of studies were reported which indicated that measurement of the dissolution characteristics of a solid dosage form constituted a much more reliable index of the suitability of the product formulation than did even the modified and improved disintegration test. On this basis, it was suggested that the compendia consider adoption of the dissolution test with a view toward its replacing the disintegration test.

Recognizing the complexity and serious ramifications involved, the compendia officials appointed a joint panel reflecting wide experience, as well as a wide diversity of affiliations and viewpoints. Concurrently, developmental work was initiated and given a high priority in the laboratory jointly sponsored by the compendia.

But then a rather curious turn of events occurred. Resistance began to surface from various sources: opposition for ill-defined reasons came from many of the drug manufacturers; academic scientists each appeared to have personal preferences with respect to the design of the apparatus and the test methodology to be employed; and various elements within the regulatory agencies appeared to have different views, depending upon their respective roles in the scheme of drug regulation and surveillance. The net result was that a test specification, which appeared to have a general consensus of blessing and support, almost overnight deteriorated into a controversial "hot potato" beset by political, economic, and administrative overtones.

In late 1968, a decision was made by the National Formulary, with the support of the NF Board, to "bite the bullet" and to proceed with initial implementation of the dissolution test. Shortly thereafter, a similar decision to move forward was made by the USP. So it was that the first compendia dissolution test requirements to be adopted anywhere in the world appeared in six monographs each of the 1970 editions of the *NF* and *USP*.

Regrettably, this action did not still the criticism—some of which, undoubtedly, was justifiable but much of which appeared otherwise. Some constructive criticism was offered with a view toward making the procedure more reproducible, reliable, and indicative of drug product quality. Any refinements that would contribute to these characteristics were welcomed since the compendia officials recognized that the procedure, the apparatus, and the methodology were certainly less than perfect. Nevertheless, all evidence indicated that the general approach being followed represented the best available and that it constituted a significant contribution toward drug product standardization.

The continued criticism and controversy were largely responsible for the relatively little progress made in applying this requirement to additional monographs in the 1975 editions of the compendia. Ideally, the early 1970's should have been devoted to extending the dissolution requirement to a significant number of additional tablet and capsule monographs. Instead, most of the effort had to be directed at "reinventing the wheel," so to speak, by retracing much the same ground and reconfirming the same decisions that led up to the specification as it had already appeared in the 1970 editions.

Consequently, the recent announcement of the USP Executive Committee action constitutes a "great leap forward." We consider it welcome news and hope that the next few years will be marked by broad collaboration and general cooperation, with the result that the stated goal for the 1980 compendia will, in fact, be attained.

Edward G. Feldmann