Disintegrant 10% w/w	Dicalcium phosphate dihydrate system		Calcium-phosphato-carbonate complex system	
	Dist. time min	Dissolution time min*	Dist. time min	Dissolution time min*
Corn starch	30	15	>120	>30
Sodium carboxyl methyl cellulose	56	>30	90	>30
Calcium sodium alginate	5	10	42	>30
Cation exchange resin	1·4	15	2·5	25
Sodium starch glycolate	0·4	4·5	26	>30

* 50% dissolution.

The effect of concentration of disintegrants on disintegration times of different systems is interpreted in terms of the differing mechanisms by which these substances act as disintegrants. It is suggested that tablet hardness and density measurements may provide some indication of the mechanism by which different disintegrants modify the compression process. It is concluded that any pharmaceutical scientist developing a new direct compression tablet system should seriously consider the possibility of using either sodium starch glycolate or the cation exchange resin as disintegrants.

REFERENCE

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Effect of compaction pressure on dissolution times of some direct compression systems

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The effect of compaction pressure upon the dissolution profiles obtained from a variety of direct compression tablet systems has been investigated. Two techniques have been used for compaction; compacts were prepared using a laboratory hydraulic press and tablets were made using a Manesty single punch machine type F3. The systems were kept as simple as possible, 1% w/w amaranth was included as tracer in all systems (Manudhane, Contractor & others, 1969) and 1% magnesium stearate was used as a lubricant. A cation exchange resin (Amberlite IRP88) was added as a disintegrant for dicalcium phosphate dihydrate and similar systems. Microcrystalline cellulose (Avicel) systems, however, did not require any disintegrant. Tablet hardness was measured using an Erweka tablet hardness tester, disintegraton time was determined using the B.P. method. Apparent tablet densities were obtained from thickness and weight measurements. The compaction process has also been examined by photomicrographic technique. Some of the results are shown in the following Table.

Dicalcium phosphate tablets (containing 2% w/w Amberlite).

Table pressure increasing 1 to 4 units machine setting	Tablet hardness Erweka	Apparent tablet density g cm³	Disintegration time (min)	Dissolution time (min)		
				t50%	t75%	t90%
P1	1·5	1·812	>120	>30	>30	>30
P2	7·0	1·930	15	8	29	>30
P3	9·0	1·954	10	4	13·5	>30
P4	9·5	1·955	8	4	8	15

The results for the effect of compaction pressure on dissolution for dicalcium phosphate dihydrate systems showed that increase in the pressure and the hardness of tablets enhanced the dissolution rate. The results obtained with the microcyrstalline cellulose systems were quite different from those shown in the above Table. Increase in pressure for the Avicel systems caused a significant decrease in the dissolution rate.

REFERENCE

MANUDHANE, K. S., CONTRACTOR, A. M., KIM, H. Y. & SHANGRAW, R. F. (1969). *J. pharm. Sci.*, **58**, 616–620.