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Impact of Tablets Hardness on Dissolution Rate of Metoprolol Tartrate 100 mg Tablets

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Metoprolol is a cardioselective β -blocker that is classified as a class I substance according to the Biopharmaceutics Classification Scheme BCS, meaning that it is highly soluble and highly permeable. Dissolution test was carried out according to EP 2.9.3. in medium 0.1N HCl, 900 ml, 100 r/min, sampling time 5 minutes. Quantification was spectrophotometric measurement on 275 nm.

The results of dissolution analysis are summarized in Table 1, sample 1 hardness 123–137 N, disintegration 5.21–9.17 min, sample 2 hardness 157–168 N, disintegration 8.38–14.10 min and sample 3 hardness 132–151 N, disintegration 12.23–14.23 min.

Tab. 1.

Min	5	10	15	20	25	30	f2
Sample 1							
% dissolution	24,29	47,88	68,32	86,01	98,99	100,35	
SD	1,29	3,31	3,99	4,44	3,54	1,39	
RSD	5,33	6,91	5,84	5,17	3,58	1,39	75.21
Sample 2							
% dissolution	21,42	43,00	62,35	78,86	91,72	97,85	
SD	2,57	4,07	5,07	5,69	4,95	1,99	
RSD	11,98	9,46	8,13	7,22	5,40	2,04	78,22
Sample3							
% dissolution	22,18	44,78	65,45	82,85	95,47	98,47	
SD	3,60	5,78	6,65	6,38	4,20	1,02	
RSD	16,21	12,90	10,15	7,70	4,40	1,04	99.18
Reference drug							
% dissolution	22,28	44,96	65,41	82,66	94,84	98,52	
SD	4,00	8,20	9,90	12,10	11,10	6,41	
RSD	17,95	18,25	15,13	14,64	11,70	6,51	

Sample 3 has the highest f2 compared to reference drug, Samples 2 and 1 have values significantly different from the reference drug results. This study helps in revealing the effect of formulation processing variables on tablet properties.

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