The objective of this work was to study the efficiency of certain disintegrants in low levels on the physical characteristics and dissolution behavior of directly compressed tablets containing theophylline as a model drug. A directly compressible formula based on !,1vicel PH 102/Emcompress 1:1 weight ratio was used in the preparation of theophylline laQ!ets after being efficiently mixed together in a turbula mixer with or without the addition of disintegrants. The used disintegrants namely were cross-linked carboxymethylcellulose sodium (Ac-Di-Sol), sodium starch glycolate (Exp/a/ab), crosspovidone (Po/yplasidone XLJ O) and Starch 1500, in low concentrations from 1 to 4 %w/w. The physical properties and the dissolution behavior of the directly compressed theophylline tablets were evaluated according to USP XXJIJ (1995) limits. All the formulations of theophylline tablets showed good mechanical properties and complied with the standard requirementsfor uniformity of dosage units and friability. Directly compressed theophylline tablets without disintegrants (control) gave longer disintegration time which exceeds 30 min (outside the limits of USP), and slow dissolution rate. While the batches of tablets containing disintegrants exhibited rapid disintegration and faster dissolution rate except those tablets containing starch 1500. Mechanisms of the drug release were investigated from dissolution data of theophylline tablets according to zero-order, first-order and the matrix-diffusion controlled kinetics. The behavior of drug release from theophylline tablets (control) and those containing either Explotab or Starch 1500 occurred predominantly by diffusion mechanism, while the drug release from ***tablets containing either Ac-Di-Sol qr Pol;-p!asidone folloH•ed first-order kinetics.***