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Title: **Numerical Methods For Predicting Roll Press Powder Compaction Parameters**

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Abstract:

Large numbers of cohesive powders are compacted using a roll press. The principle of compaction is that particulate materials become a compact when they are subjected to high pressure.

Experimental work was carried out on pharmaceutical powders [1] to determine the influence of operating parameters on the roll process compaction. Theses parameters are determined for a given powder and must be measured again for any other powder. The subject of this work is to understand how to optimize the process parameters versus the mechanical behavior of powder and the roll-wall friction.

Rolling theory for granular solids has been continuously investigated for more then 40 years without a successful model representing the phenomenon. In this work, overall rolling compaction of powders is discussed followed by study of three different theoretical approaches. First the Johanson model is fully studied with the use of Matlab. Overview of the other two methods: slab method and ALE finite element method was also included. A comparison between these models is done to determine the most applicable method for further study.