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### **Powder Compressibility Assessment: Manufacturability Classification System vs. SeDeM Expert System**

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Manufacturability Classification System (MCS) and SeDeM Expert System have been proposed as mathematical tools facilitating directly compressible tablet formulation [1, 2]. The aim of this work was comparative evaluation of SeDeM and MCS for powder compressibility assessment.

Three active ingredients (ibuprofen, caffeine, paracetamol) and four directly compressible excipients (Ludiflash, Disintequik ODT, Pharmaburst 500, Parateck M200) were evaluated. The investigated powders were characterized with respect to relevant properties determining their flowability and compression behaviour. Experimentally obtained data were mathematically transformed to radii parameters for further evaluation. Subsequently, parameter profile (IPP) and good compression indices (IGC) were calculated as representative measures for powder compressibility assessment.

The results obtained revealed high level of correlation between the IPP and IGC values estimated using both investigated approaches, characterized with the correlation coefficient of 0.9266. While SeDeM expert system is less demanding with respect to the experimental setting required and includes somewhat simpler mathematical processing of the experimental data, MCS provides more detailed insight into material properties influencing powder compression. Furthermore, discriminatory power of the MCS approach appears to be higher since it was able to clearly differentiate poorly performing paracetamol and ibuprofen from caffeine and directly compressible/co-processed excipients (i.e. 3.9 and 6.4 vs. approx. 8.5). Data obtained can be employed as a proof of concept for further elucidation of flowability and compression behavior of more complex, composite powder samples and multiparticulates.

#### References

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2. Leane M. et al. Pharm. Dev. Technol. 20(1), 12-21 (2015).

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