

Thesis Title            Application of Stress Relaxation to  
Herbal Tablet Formulation

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#### ABSTRACT

Stress relaxation principle was employed to study the tableting behavior of various herbal powders, i.e., mint, licorice root, compounded root and the herbal mixture (HM) which comprised mostly compounded root. Mint and licorice was found to compose of high cellulose content, whereas compounded root composed high starch content. An instrumented single punch tablet machine equipped compression force and punch displacement monitoring devices.

The stress relaxation curves were analyzed using all three method recommended to date, i.e., Shott, Maxwellian and Hiestand treatments. The analysis revealed that three methods gave similar result. Herbal powder containing high cellulose contents were found to undergo more plastic deformation than did those containing high starch content. The degree of deformation depended upon the peak force.

The addition of HM to the direct compression fillers could alter the tableting behavior of the fillers. The degree of stress relaxation may either increase or decrease depending on the nature of the fillers. However direct compression method could not be employed to prepare satisfactory HM tablets, since the dosage of HM was quite high and it also possessed high degree of elasticity. The wet granulation technique appeared to be a suitable approach to improve the plasticity of HM. All binders tested were found to increase the plasticity of HM to the same extent. The increase in binder content enhanced the plastic flow and tablet formation. It could be concluded that stress relaxation data could be used to predict the tableting behavior of the herbal powders and the incorporation of binder would improve the plastic flow of the materials, thus increase the compressibility.