ABSTRAK

Dalam proses pembuatan tablet, industri farmasi sering melakukan modifikasi proses dalam bentuk pengempaan berulang untuk mengurangi kerugian biaya produksi dan menghemat waktu produksi. Polivinilpirolidon (PVP) K-30 merupakan bahan pengikat yang sering digunakan dalam formulasi pembuatan tablet. Proses pengempaan berulang dapat mungkin memberikan pengaruh terhadap fungsi PVP K-30 dalam menyatukan kembali bahan – bahan penyusun tablet. Perbedaan konsentrasi PVP K-30 pada setiap formula juga akan mempengaruhi sifat fisik granul dan tablet yang berbeda. Penelitian ini bertujuan untuk mengetahui ada tidaknya pengaruh frekuensi pengempaan berulang dan perbedaan konsentrasi PVP K-30 terhadap kualitas sifat fisik tablet kalsium laktat 300mg. Pengaruh pengempaan berulang dan konsentrasi PVP K-30 dilihat dari ada tidaknya perbedaan bermakna pada sifat fisik campuran (kecepatan alir, kompresibilitas campuran, dan kompaktibilitas) dan sifat fisik tablet (kekerasan, kerapuhan, waktu hancur, keragaman bobot) setelah mengalami pengempaan berulang sebanyak dua kali. Tablet kalsium laktat dibuat dengan metode granulasi basah. Terdapat dua formula pada penelitian ini dengan konsentrasi PVP K-30 2%b/b dan 4%b/b. Data dianalisis secara statistik dengan software SPSS menggunakan uji normalitas *Shapiro-Wilk*, kemudian dilanjutkan dengan uji *two-way Analysis of Variance* (ANOVA) atau Kruskal-Wallis dan uji *Post Hoc Mann Whitney*. Hasil penelitian menunjukan terdapat pengaruh pengempaan berulang terhadap sifat fisik campuran dan sifat fisik tablet kalsium laktat 300mg.

Kata kunci: PVP K-30, pengempaan ulang, granulasi basah, kalsium laktat

ABSTRACT

In the process of tablet manufacturing, the pharmaceutical industry often performs reworking potential in the form of repeated compression to reduce production cost losses and save production time. Polyvinylpyrrolidone (PVP) K-30 is a binder that is often used in tablet formulations. The process of repeated compression may affect the function of PVP K-30 in reuniting the constituent ingredients of the tablet. Differences in the concentration of PVP K-30 in each formula will also affect the physical properties of different granules and tablets. This study aims to determine whether there is an effect of the frequency of repeated compression and differences in the concentration of PVP K-30 on the quality of the physical properties of 300mg calcium lactate tablets. The effect of repeated compression and concentration of PVP K-30 is seen from the presence or absence of significant differences in the physical properties of the mixture (flow rate, compressibility, and compactibility) and the physical properties of tablets (hardness, friability, disintegration time) after experiencing repeated kneading twice. Calcium lactate tablets were made by wet granulation method. There were two formulas in this study with PVP K-30 concentrations of 2%b/b and 4%b/b. The data were analyzed statistically with SPSS software using Shapiro-Wilk normality test, then continued with *two-way Analysis* of Variance (ANOVA) or *Kruskal-Wallis* test and *Mann Whitney Post Hoc* test. The results showed that there was an effect of repeated compression on the physical properties of the mixture and the physical properties of 300mg calcium lactate tablets.

Keywords: PVP K-30, reworking, wet granulation, calcium lactate