Effect of Alcohol Used in Bovine Colostrum Powder Granulation on the Protein Content and Bacterial Microflora

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SUMMARY

Maintaining and improving of immunity has become a matter of interest for everyone in this day considering the appearance of drug-resistant strains of pathogenic (disease-causing) microorganisms and new dangerous diseases that are often resistant to all known antibiotics. In this condition, a new interest for the old and natural remedy has emerged. Bovine colostrums form the first day after calving is a natural product rich in protein, immunoglobulin (natural antibody), lactoferrin, vitamins and minerals with rapid absorption in human body. In order to keep intake these substances, which are destroyed by high temperature, this product is turned into powder by freeze-drying, a process that involves drying by sublimation under vacuum condition and below 45°C. (Borissenko et al., 2009)

The purpose of the test is to evaluate the changes occurred in the composition of colostrum powder obtained by lyophilization during wet granulation process (mixing with alcohol of starch). The initial powder present a low flowability, is electrified, very light and fluffy, with low density (0.20g/l), characteristics that make the powder difficult for subsequent processing. 14 formulations are prepared by mixing the powder with different concentration of ethanol and pharmaceuticals binders, passed to a sieve with aperture 2 mm and dry in a oven at 35–45°C. The alcohol used during the testes destroys over 70% of the protein but sterilize the product (the decrease of the microorganisms is from 2700*10^3 to a media 70*10^3 cfu/g)

Although the alcohol denature the protein between 25.61 to 29.83%, the beneficial effect can be observed on the microbial load that drops to around 3.81–8.89% from the initial value but also on the appearance and on the particle size. The freeze-dry process does not allow any sterilization of the product so that the utilization of 40% ethanol is preferable in practice because the effect on the protein is low and microorganisms are destroy at a rate of over 90%.

REFERENCES