FACTORS AFFECTING THE SYNERESIS AND COAGULATION IN ULTRA-FILTERED CHEESE

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Abstract

The use of ultrafiltration in the world as a method of the serum proteins utilization is a long tradition, although in our country it almost has no application.

During the tests were monitored three variants of ultra-filtered white brined cheese: control (M), M_1 variant with 0.6 g/L enzyme transglutaminase (TG) applied, and M_2 variant with 1.3 g/L TG enzyme. The application of microbiological enzyme transglutaminase was in order to determine its impact on the physical, technological and rheological features in the variants. The factors that affect coagulation and syneresis of the cheese weight, as well as their chemical composition were controlled in the milk laboratory at the Institute of Animal Science in Skopje, Macedonia. Actually, it was monitored how: amount of separated whey (syneresis) during coagulation, amount of rennet added and pH on the coagulation index, the occurrence of initial and complete coagulation at different temperature regime of curdling (31 and 34°C) and utilization of the milk components in retentate (concentrate), were depending on these factors.

In terms of the results it was found that the smallest amount of separated whey occurs after cutting the cheese in all three variants, with special emphasis on reduced syneresis in variants M_1 and M_2, where the enzyme is applied. In terms of environmental pH, it was found that at higher pH of the environment there is a prolonged coagulation, while at pH lower than 6.51 the coagulation reduces by 12% compared to the previous (6.87), 16.44% for M_1 and 14.82% for M_2 variation in relation to the M variant. It was found that by increasing the amount of $CaCl_2$ and the curdling temperature, the coagulation accelerates too, and the TG enzyme is independent of the action calcium ions. The main goal of this research is determination of the opportunities for higher utilization of the serum-proteins and their incorporation in the protein complex, with various factors affecting the coagulation and syneresis of the cheese weight.

***Key words**: Ultra-filtered cheese, Coagulation, Syneresis.*