STUDY OF THE RHEOLOGICAL AND SENSORY PROPERTIES OF MAYONNAISE WITH DIFFERENT COMPOSITIONS

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Abstract

The food industry takes many aspects into account when developing a product, but of course its primary aim is to produce a food that is safe and that will appeal to consumers. Current consumer trends focus on the careful selection of food ingredients, attentive reduction of their quantity, and the use of natural ingredients. In our experimental work, we aimed to develop different mayonnaise recipes and to instrumentally characterize the samples, testing their viscosity, heat stability and sensory properties. The results were evaluated to asceratein the most favourable composition that can be prepared also at home and has similar properties as the industrially produced mayonnaise. Using natural ingredients, we investigated how the variation in the amount of each component (sugar, salt, apple vinegar), at constant amount of sunflower oil, affects the measured parameters (consistency, viscosity, stability, sensory properties). In addition, various compounds were tested as emulsifiers, e.g. lyophilized egg powder, cheese powder or fresh egg yolk. New insights have been gained into the emulsifying capacity of lyophilized egg yolk powder and its effect on the consistency and viscosity in an emulsion-type food product, mayonnaise. We chose Univer mayonnaise as a control sample and compared the measured data of mayonnaise produced with 11 different formulations and evaluated the differences and similarities. The mayonnaise samples made from lyophilized products (egg yolk and cheese) were found to be favourable for the instrumental texture analysis. Among these, the mayonnaise made with 10% lyophilized egg yolk powder showed the highest hardness value. In terms of viscosity, increasing amounts of egg yolk powder and salt increased the dynamic viscosity value, while the presence of sucrose altered the viscosity of the emulsion by inhibiting droplet movement and aggregation. The results of the statistical data evaluation indicated that the only component of the mayonnaise samples that influenced the heat stability was the amount of added sucrose. Based on the sensory evaluation, the most preferred mayonnaise was the commercially available Univer mayonnaise, followed by our sample with the highest content of lyophilised egg yolk powder. The statistical analysis of the sensory evaluation of the grouped samples concluded that the difference in sweetness between the samples was too large. For the salty taste sensation, the difference between the average rankings of all groups was not large enough to be statistically significant. For the other sensory attributes such as colour, odour/smell, fluidity, stickiness, viscosity and bubbliness, the statistics found significant differences between the rankings of the means.