

ABSTRACT

In the theoretical part of this thesis are presented definitions of nanoemulsions, there are described their preparation and production methods, physical properties and their application are also included. In the next part is attention paid to colloidal carriers of active ingredients, functional foods, and characteristics of vegetable oils. The focus of the work is on the experimental part. There were prepared many submicron emulsions of the o/w type containing various vegetable oils in the inner phase. These nanoemulsions were prepared by using dispersion method by batch type or continuous type homogenizers of the stator-rotor principle. The samples prepared by composition and process changes were evaluated on the granulometry point of view, especially was monitored the fraction of upper micron size. It was proven that temperature doesn't influence the measured characteristics. If the concentration of the emulze is rising the efficiency of the dispersion process is decreasing. As an appropriate emulsifier was found the mixture of lecithin and polysorbate 20. The adjustment of inner phase in the viscosity and tensioactivity by the additives was not successful. Model active substances incorporated into inner phase did not influence negatively granulometric parameters. The strongest factor influencing the particle size is the intensity of homogenisation controlled by the rotor radius or by its movement. It was concluded that it is possible to use the laboratory version of dispersion and homogenisation equipment to prepare sufficient quality submicron emulsions. The advantage of the method is its possibility of scaling up and validation. It is necessary to complete the results of the study by stability testing procedure.