Summary

A content of a solute in large-volume parenterals is usually expressed in a molarity way (mol/l). From the aplication point of view, it is also necessary to express an osmotic concentration of infusions in osmolarity (osmol/l). However, the physical measurement of osmotic concentration provides an osmolality (osmol/kg), which depends on molality of the solution (mol/kg). This is why the mutual conversion between these concentrations is necessary. For the conversion of molarity to molality, the conversion factor is needed which is obtained as a difference between density of the solution and the weight of a dissolved solute. The conversion of the molality to the molarity necessitates to express the volume of the solution. In both conversions, the knowledge of the solution density is unavoidable. In my diploma thesis I focused on the study of influence of temperature in range of 15-40°C to the density of the aqueous solutions of mannitol, sorbitol, and urea in the concentrations range of 0,1 - 1,0 mol/l (molarity) or 0,1 - 1,0 mol/kg (molality). The relationship between a density and temperature was described by quadratic equations. At temperature of 20°C, the density was directly proportional to the solution concentration. The average density of the solution at 20°C was used for the mutual conversion between molarity and molality. To calculate molarity and/or molality, the equations of the linear regresion with coeficients of determination in range of 0,9977 to 1,0000 were derived.