

ABSTRACT

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Title of Rigorous Thesis: Osmolality of tonicity adjusters. Potassium nitrate.

The objective of this rigorous thesis was the study of the osmotic pressure, osmotic concentration and the comparison of methods isotonization aqueous solution of drugs. Solutions of potassium nitrate were prepared in molality and molarity in a range of 0,01 to 0,2 mol/kg and mol/l and their density was measured using a densimeter in a temperature range between 15 and 40°C. The dependence of the solution density on temperature was described by quadratic regressions with coefficient of determination ranging from 0,9997 to 1,0000. At constant temperature, a direct proportion between the potassium nitrate solution density and the solution concentration was detected. The average density of the solutions at 20°C was used for mutual conversions between molality and molarity. The osmolality of the molal and molar solutions of potassium nitrate was directly proportional to the concentration. Using the methods listed in USP, osmolarity of the potassium nitrate molar solutions was expressed. No differences in the accuracy of the investigated methods of osmolarity estimations were detected in the studied concentration range of 0,01-0,2 mol/l. Finally, the molal osmotic coefficient was expressed. It's value decreases as the molal concentration increases.