**Abstract**

Introduction: The aim of the study was to evaluate stability of 48 total parenteral admixtures for pediatric patients who require home parenteral nutrition. Admixtures contain high amounts of electrolytes. In a clinical practice electrolytes-enrichment of the parenteral nutrition admixtures is a usual demand, especially on the neonatal/pediatric wards. The supplementation of parenteral nutrition with high concentration of electrolytes is a living problem due to decreased stability of lipid emulsions in nutrition admixtures caused by bivalent cations. Methods: Preliminary admixtures were prepared in two-chamber ethylene vinyl acetate bags: amino acids, glucose and electrolytes were combined in one chamber and 20% (w/w) lipid emulsions (SMOFlipid®, Intralipid ® or ClinOleic®) were placed separately in the second chamber. Organic salts of calcium and phosphates were used. Pre-admixtures were stored at +4°C for up to 21 days after preparation. Each composition of admixtures was prepared twice, because contents of the two chambers were combined at t=0 or after 21 days of storage at +4°C. Visual observations, globule size distribution (using optical microscopy, laser diffraction and photon correlation spectroscopy methods), pH analyses, zeta potential and surface tension were performed after combining all components together with vitamins. Results: Among 48 of investigated admixtures only two were problematic and other may be stored for at least 21 days at 4°C and completed admixtures demonstrated stability for at least 24 h at room temperature. Conclusion: It was possible to obtain stable admixtures despite of the high concentration of electrolytes.

**Keywords**

Pediatric parenteral nutrition, Physical stability, Lipid emulsion, High electrolytes concentration, Home parenteral nutrition.