THE INFLUENCE OF ICODEXTRIN ON CREATININE AND ALBUMIN TRANSPORT ACROSS THE PERITONEAL MEMBRANE IN VITRO

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A glucose polymer (20,000 Da) named icodextrin has found application in dialysis fluid as it lacks the disadvantages of glucose used during peritoneal dialysis. The purpose of this study was to compare the effect of icodextrin (2g/dL) on the transfer of small (creatinine, 113 Da) and large molecules (albumin, 68,000 Da) through the isolated rabbit peritoneum in a modified Ussing chamber. A mathematical model was used to calculate the level of creatinine (0.010g/dL) and albumin (1g/dL) transport from the interstitial to the mesothelial side of peritoneal membrane (I→M) and in the opposite direction (M→I), before and after icodextrin introduction, in separate series of the experiment. The results were expressed using the diffusive permeability coefficient P (in cm/s).

Under control conditions, during the 120 minutes of the study without icodextrin, the rate of creatinine and albumin transfer from the interstitial to the mesothelial side of peritoneal membrane and in the opposite direction remained constant. The mean values of P±SEM were 3.158±0.419 (I→M), and 2.896±0.224 (M→I) for creatinine, and 0.544±0.134 (I→M), and 0.749±0.215 (M→I), [×10⁻⁴ cm/s] for albumin. The introduction of icodextrin into the experimental system did not change the bidirectional creatinine transport and albumin transfer directed from the interstitial to the mesothelial side of peritoneal membrane, but it caused an increase in P values of about 77% in the opposite direction (p<0.03). In conclusion: in vitro, icodextrin influences albumin M→I peritoneal transport. The reason for the transfer modification may be connected with a change in the colloid pressure gradient.