

Summary

Devices were constructed for implantation in subcutaneous connective tissue of sheep and dog to examine the correlation of subcutaneous steady state glucose concentration at implantation site and intravenous blood plasma glucose concentration.

The glucose concentration of the following fluids, got in vivo, was enzymatically determined in vitro: ultrafiltrates, dialysates and fluid from perforated capsules.

In plasma of parallelly withdrawn blood glucose concentration was determined enzymatically, too. Till 8 days after the implantation of units plasma and dialysate glucose were almost in agreement in view of the margin of error. For longer implantation periods - dialysis implants 18 weeks, perforated capsules 309 days, ultrafiltration implants 110 days - there was a variation of glucose concentration in fluids from implants ranging from 0 % to 90 % of plasma.

In all cases a fast healing was observed clinically.

Exclusively histologically and only in some cases chronic inflammation was determined. The reason for the inflammation however cannot be seen in bad histocompatibility of the implanted material. Because of the influence of inflammation on local glucose concentration the results are explainable in these cases.

The most striking result however is the variation of dialysate glucose from 20 % to 90 % of plasma glucose even from implants located at such sites where no inflammation was detected neither clinically nor histologically.