PURPOSE:

To determine if Cornisol, an indigenous intermediate-term corneal storage media, is comparable with Optisol-GS for storing tissues at 2-8°C for 14 days.

MATERIALS AND METHODS:

This was a prospective, in-vitro, randomized, masked study using paired corneal tissues. Only tissues not suitable for surgery were used. 25 pairs of donor tissues met the inclusion criteria. One tissue of each pair was randomly stored in Cornisol and the mate in Optisol-GS. The donor demographics and baseline slit-lamp findings were noted. Specular microscopy images were taken at baseline and repeated on day 3, 7, 10 and 14. The endothelial cell density (ECD), coefficient of variance (CV) and percentage hexagonality (6A) were recorded. On the 14th day histological examination was done with dual Alizarin Red-S and Trypan Blue staining. The histology images were analysed with ImageJ software and correlated with specular findings.

RESULTS:

There was no significant difference between the baseline slit-lamp parameters (p=0.75 to p=1). The ECD, CV and 6A on all five readings were not significantly different. The endothelial cell loss (ECL) over 14 days was 13.46% in the Cornisol group and 14.04% in the Optisol-GS group (p=0.25). Histology also showed no significant difference in ECD (2380 ± 287 in Cornisol vs 2330 ± 309 in Optisol-GS group; p=0.28) and they correlated well with the specular findings (Pearson coefficient of 0.49 and 0.34 respectively).

CONCLUSION:

In terms of endothelial cell count, CV and 6A, there is no significant difference between Cornisol and Optisol-GS. However we need to do a clinical study and look at the tissue thickness for further confirmation.

KEYWORDS: Optisol-GS, Cornisol, Corneal storage media, endothelial cell count, endothelial viability, histology, ImageJ