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Service (sector) Retina and Vitreous N° CEP

Analysis of molecular weight distribution of intraocular applied silicone oils.

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PURPOSE: To analyze the extent to which silicone oils of various origins differ with respect to their molecular weight distribution, we studied and compared as many of the silicone oils in clinical use as possible .

METHODS: Distribution of molecular weight of six samples of different silicone oils is been evaluated using gel permeation chromatography (GPC). The GPC analysis is performed using a Hewlett Packard.LC ChemStation Series 1100 with a Waters 410 refractive index detector . The molecular weight distributions were calculated by PL Caliper GPC/SEC software based on polystyrene calibration standards. The samples were dissolved in tetrahydrofurane (THF) and toluene and analyzed with Styragel HR 4E, HR 2, and 100 A columns for THF and Ultrastaragel 10e4, 10E3, and 100 A columns for toluene.

RESULTS: The samples were sent for laboratory analysis. The results will be presented at the meeting.

CONCLUSION: Silicone oils (SiO) has been used as a surgical tamponade in severe cases of vitreoretinal pathology. However the intraocular application of SiO can lead to a number of complications, such as keratopathy, increased intraocular pressure, emulsification and cataract formation. SiO are poly-dispersed synthetic polymers that consist of mixtures of linear species of different chain lengths and may contain low molecular weight components (LMWC). LMWC, defined to be linear and cyclic species with a molecular weight of < 2400 daltons, may enhance emulsification of SiO and may be related to chronic ocular toxicity, as they difuse into surrounding ocular tissues. This is a pilot study to investigate the physicochemical properties and biocompatibility of SiO used in Brazil.