# Biosafety of hydrogen peroxide solution to disinfect blue light-filtering contact lens

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**Purpose:**
To establish the biocompatibility of hydrophilic lenses made of different materials, each having different absorbance levels for short wavelengths, and treated by peroxide disinfection Ever Clean® (Avizor) on in-vitro human conjunctive fibroblasts.

**Methods:**
Human conjunctive fibroblast cultures were incubated for 12 hours in three groups of blue light-filtering contact lens made by different materials (Hema 38%, Profilcon A 52% WC and Ocufilcon D 55% WC) that had been treated by peroxide disinfection Ever Clean®. Toxicity was examined by means of: 1) level of reactive oxygen species, 2) integrity of the mitochondrial membrane, 3) activation of caspase-3 and 4) activation of H2AX, compared with non-treated cells (basal control) and cells exposed to a known cytotoxic effect with H2O2 (toxicity control).

**Results/Data:**
The means obtained were normalized in fluorescence units (FU). Means for intensities of reactive oxygen species were as described in Table 1.

**Table 1:**

| | Mean | | | |
|---|---|---|---|---|
| | Intensities of reactive oxygen species | Mitochondrial membrane potential | Intensities in levels of caspase-3 activation | Intensities in levels of H2AX activation |
| **Hema lenses** | 0.9886 ± 0.1999FU | 1.2863 ± 0.1034FU | 1.1442 ± 0.0224FU | 1.2014 ± 0.1290FU |
| **Profilcon A lenses** | 0.8574 ± 0.1632FU | 1.1424 ± 0.0826FU | 1.0530 ± 0.0300FU | 1.1650 ± 0.0964FU |
| **Ocufilcon D lenses** | 0.9694 ± 0.2022FU | 1.2329 ± 0.1049FU | 1.0426 ± 0.0580FU | 1.3009 ± 0.1585FU |
| **Basal control** | 1.0000 ± 0.0977FU | 1.0000 ± 0.0100FU | 1.0000 ± 0.0300FU | 1.0000 ± 0.0690FU |
| **Toxicity control** | 1.5969 ± 0.0176FU | 0.6517 ± 9.1349e-3FU | 1.6400 ± 0.0190FU | 1.8253 ± 0.0650FU |