

NCC 'FUTURE GENERATION 2024' POSTER Abstracts
SCIENTIFIC SESSION IN COOPERATION WITH THE BCLA

NCC 'Future generation 2024'

Organization Section: NCC/ BCLA

POSTER Abstracts

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Impact of lysozyme uptake and denaturation of comfilcon A with MPDS Containing a Novel Hyaluronic Acid Derivative

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Purpose: To evaluate surface uptake of lysozyme on comfilcon A lenses following soaking in a multi-purpose disinfecting solution (MPDS) with and without a low molecular weight hyaluronic acid derivative (HAD) with hydrophobic groups, and to assess the impact of repeated care cycles on lysozyme denaturation.

Method: a) After soaking comfilcon A lenses in fluorescently labeled lysozyme, lenses were treated with an MPDS with and without HAD. Lysozyme on the lens was observed with a confocal laser microscope. b) After soaking comfilcon A lenses in an artificial tear solution (ATS) containing lysozyme, lenses were treated with saline, MPDS containing a block polymer, MPDS containing HA, and MPDS with (HAD+) and without HAD (HAD-) and without HAD (HAD-) for 7 care cycles alternating with a soak in artificial tear solution and analyzed for % denatured lysozyme using HPLC and microcococcus lysis.

Results: a) Fluorescent microscopy revealed a significantly higher level of lysozymes at both surfaces and in the bulk of the lenses soaked in HAD- vs HAD+ MPDS conditions (p,0.05).
b) The percentage of denatured lysozyme after 7 cycles in the HAD+ solution was

significantly lower than for all treatment conditions ($p < 0.001$). Denaturation was significantly reduced relative to both HAD- and baseline : BL 72.1, MPDS with HAD-87.3%, HAD + 34.1%.

Conclusions: The addition of low molecular weight hyaluronic acid derivative containing hydrophobic groups can significantly reduce the uptake of lysozymes on the surface and in the bulk the comfilcon A material. Once lysozyme is present on the lenses, the HAD+ MPDS was effective in significantly reducing the amount of denaturation that occurs with repeated lens care cycles.

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