

Superior performance of preservative free ocular lubricants with high molecular weight Hyaluronic Acid

This abstract was presented at the 2023 ARVO Annual Meeting, held in New Orleans, LA, April 23-27, 2023.

The clinical efficacy of higher molecular weight sodium hyaluronate in artificial tears: A randomised clinical trial

David Semp; Aston University, Birmingham, Birmingham, United Kingdom

Debarun Dutta; Aston University, Birmingham, Birmingham, United Kingdom

James S.W Wolffsohn; Aston University, Birmingham, Birmingham, United Kingdom

Purpose: To ascertain whether the molecular weight of sodium hyaluronate in artificial tears, affects its clinical efficacy.

Methods: The rheology of HydraMed, Evolve and Hylo-Forte eye drops, which all contain 0.2% hyaluronic acid as the principal component, was assessed using a research rheometer fitted with a 60mm aluminium flat plate measuring system at 31°C. Shear rate profiling was performed on each artificial tear. A total of 25 participants diagnosed with dry eye disease (TFOS DEWS II criteria), aged 23.6±9.2 years, were randomly allocated to receive each drop, on different days. Comfort, non-invasive breakup time, tear meniscus height and ocular redness was assessed at baseline and then 5, 15, 30, 45, 60 and 90 minutes after application.

Results: Hylo-Forte showed a more non-Newtonian relationship between viscosity and sheer force ($r^2=0.295$) compared to HydraMed ($r^2=0.485$) and

Evolve ($r^2=0.521$). Comfort and tear stability improved with drop instillation ($p>0.05$), declining with time ($p<0.001$), with all drops following a similar profile ($p>0.05$). Hylo-Forte demonstrated the highest comfort and tear stability retention effect. Tear volume increased with drop instillation and then declined with time ($F=18.643$, $p<0.001$). Evolve had a reduced initial effect compared to HydraMed and Hylo-Forte ($F=4.045$, $p<0.001$). Average bulbar redness was low (0.63 ± 0.44 Efron grade) and did not change with drop application ($F=1.721$, $p=0.120$).

Conclusions: The molecular weight and rheology of sodium hyaluronate in artificial tears leads to differences in clinical effectiveness. The intra-blink viscosity reduces (which may reduce frictional effects) compared to the inter-blink viscosity, increasing in-eye retention and comfort.

HYLO®-Forte contains long lasting high molecular weight Hyaluronic Acid offering:



Increased ocular retention time



Increased comfort



Superior clinical effectiveness

For further information about the clinical benefits of high molecular weight Hyaluronic Acid, please scan here.



David Semp, Debarun Dutta, James S.W Wolffsohn; The clinical efficacy of higher molecular weight sodium hyaluronate in artificial tears: A randomised clinical trial. *Invest. Ophthalmol. Vis. Sci.* 2023;64(8):3970.