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BLINDING CRYSTALS: MONOSODIUM URATE AND DIABETIC RETINOPATHY

Udochukwu Amanamba, Bartoli Manuela, and Menaka Thounaojam

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Blinding Crystals: Monosodium Urate and Diabetic Retinopathy

Presenter(s): Udochukwu Amanamba

Author(s): Udochukwu Amanamba¹, Manuela Bartoli², and Menaka Thounaojam²

Faculty Sponsor(s): Manuela Bartoli, PhD and Menaka Thounaojam, PhD

Affiliation(s): ¹Department of Psychological Sciences, ²Department of Ophthalmology (Augusta Univ.)

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ABSTRACT

Diabetic retinopathy (DR) is a common complication of diabetes and the leading cause of blindness among working-age adults. Presently, there is no real cure for DR. Therefore, validation of risk factors such as Monosodium urate (MSU) will help identify diagnostic and therapeutic targets to prevent vision loss in diabetic patients. Previous studies have established that hyperglycemia promotes chronic sub-clinical inflammation which cause retinal tissue injury and DR. Our study focused on investigating the molecular basis of inflammation in DR, specifically how MSU stimulates sterile inflammation in retinal blood vessels through the induction of NLRP3 inflammasome. Human retinal endothelial and epithelial cells were treated with clinically relevant doses of MSU, high glucose, or a combination of both. The expression of NLRP3 inflammasome constituents such as IL-1b, NLRP3, Toll-like receptor, Gasdermin D, and Thioredoxin-interacting protein were monitored using western blotting analysis and ELISA assay. The results showed that MSU significantly potentiated the production of NLRP3 inflammasome constituents. This supports MSU as a contributing factor to the pathogenesis of DR and suggests that uricemia should be monitored in diabetic patients as a preventative measure. The results of this study also suggest that hypouricemic drugs could be helpful in combating DR and vision loss in diabetic patients.

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Correspondence: Udochukwu Amanamba, Augusta University, 1120 15th St. Augusta, GA 30912, uamanamba@augusta.edu