



### PP39<sup>B</sup>

#### Isolation, identification and crystallization properties of urinary glycosaminoglycans (GAGs) derived from black and white subjects

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**Objectives:** Consideration of the published basic science studies on the black versus white anomaly in South Africa's two population groups shows that urinary macromolecules have been extensively investigated. However, very little research has addressed the possibility that urinary GAGs may be a key role player in this context. The present study describes the isolation, characterisation and crystallization properties of GAGs recovered from urines of both race groups.

**Materials and Methods:** Ten black and ten white South African male students in the age category 20-30 years each provided a 24 hour urine sample. Urinary GAGs from black (uBG) and white (uWG) subjects were recovered from pooled urines using a sequential precipitation procedure. GAGs and proteins were identified in uWG and uBG using a dot blot and cellulose acetate electrophoresis. Purified GAGs were subjected to enzyme treatments to yield disaccharide units which were analysed using HPLC techniques. Nucleation and aggregation properties of isolated GAGs were tested in ultrafiltered urine from black (BUF) and white (WUF) subjects.

**Results:** The dot blot confirmed the presence of THP, prothrombin, bikunin and albumin in the urine extract isolated from both groups. The total protein concentration was greater in the black subjects (149.6 vs 105.4 µg/ml). Higher concentrations of individual GAGs (CS and DS) in the extract from black and white subjects respectively were observed. No difference was observed in the HA content. BG demonstrated greater promotion of crystal nucleation (49.3%) compared to WG (10.5%) in BUF. On the other hand, WG (60.4%) showed a greater promotion of nucleation than BG (47.8%) in WUF. BG and WG both inhibited crystal aggregation in BUF and WUF.

**Conclusion:** The present study provides evidence that differences in the composition of GAGs isolated from the two groups may exist. It may be speculated that these differences may influence crystallization processes.