Title : **Analysis of anthocyanin extract from Roselle and Blueberry Using Two extraction methods and evaluation of their Anti-glycation Potential via BSA-fructose and BSA- ribose in vitro models**

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ABSTRACT

Advanced glycation end products (AGEs), generated through non-enzymatic reactions between reducing sugars and proteins, contribute to protein dysfunction and the progression of metabolic and age-related disorders. The identification of natural compounds capable of inhibiting AGE formation is therefore of considerable interest.This study investigated the anti-glycation activity of anthocyanin-rich extracts from roselle (Hibiscus sabdariffa) and blueberry obtained using two extraction methods. Anti-glycation potential was evaluated using BSA–fructose and BSA–ribose in vitro glycation models over a 10-day incubation period to monitor progressive AGE formation and assess stage-specific inhibition. AGE formation was quantified, and percentage inhibition was calculated relative to glycated controls.In the BSA–fructose model, roselle extracts exhibited consistent inhibition (38–50%) throughout incubation, indicating sustained suppression of glycation progression, whereas blueberry extracts showed lower and more variable effects. In the accelerated BSA–ribose model, roselle extracts demonstrated strong early inhibition (>70%) followed by moderate but persistent activity (40–50%). Blueberry extracts displayed less consistent inhibition.Overall, roselle extracts demonstrated both rapid and sustained anti-

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glycation effects in vitro, highlighting their potential as natural inhibitors of progressive AGE formation.

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