Review Form 3

Journal Name:	International Journal of Biochemistry Research & Review
Manuscript Number:	Ms_IJBCRR_127521
Title of the Manuscript:	**Assessment of Biomarkers of Glycation in Type I, Type II and Gestational Diabetes Mellitus**
Type of the Article	

PART 1: Comments

	Reviewer's comment	Author's Feedback *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.	This manuscript provides valuable insights into the effectiveness of alternative glycemic biomarkers in diagnosing and managing diabetes, addressing a significant gap in regions like Sub-Saharan Africa. By evaluating markers such as glycated albumin, fructosamine, and 1,5-anhydroglucitol alongside HbA1c, it emphasizes the importance of complementary tools for accurate glycemic monitoring, particularly in conditions where traditional markers may be unreliable. The findings contribute to a growing body of evidence advocating for tailored diagnostic approaches in resource-limited settings, offering implications for both local and global diabetes management strategies. Additionally, this study highlights the critical need for biomarkers that reflect both short-term and long-term glucose dynamics, paving the way for improved patient outcomes.	
Is the title of the article suitable? **(If not please suggest an alternative title)**	I would prefar a change to "Exploring Alternative Glycation Markers for Comprehensive Diabetes Monitoring and Diagnosis" Emphasizes the study's contribution to exploring alternatives to traditional markers like HbA1c.	

Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	The abstract of the article is fairly comprehensive, covering the study's aim, methods, key findings, and implications. However, it could be improved with minor refinements to ensure clarity, precision, and completeness. Below are the suggestions: **Strengths of the Abstract** Objective Mentioned: The study's aim to assess glycation markers in different diabetes types is clear. Methods Summarized: The inclusion of the study location, sample size, and biomarkers analyzed adds methodological context. Key Findings Highlighted: HbA1c's reliability and the correlations of other markers with FBG are concisely reported. **Areas for Improvement** Sample Population Details: The abstract does not specify the participants' demographics (e.g., age range, gender distribution), which could improve context. Limitations: The abstract could briefly mention any major limitations, such as the small sample size or lack of diversity, to provide a balanced view. Clinical Implications: While findings are noted, the abstract could emphasize how these results may influence clinical practice or diabetes management strategies. Clarity on Key Findings: The abstract mentions correlations (e.g., FBG and HbA1c) but does not quantify them or highlight significant statistical results. Focus on Comparative Analysis: The abstract could mention whether differences between biomarkers (HbA1c vs. others) were statistically significant and in what context. **Here is a revised version incorporating the above suggestions**: Abstract (Revised) Diabetes Mellitus, a leading global health challenge, necessitates reliable diagnostic and management biomarkers. This study assessed the efficacy of glycation markers in monitoring glycemic status across Type I, Type II, and gestational diabetes in Port Harcourt, Nigeria. A cross-sectional analysis of 120 participants (40 per diabetes type) evaluated fasting blood glucose (FBG), glycated hemoglobin (HbA1c), glycated albumin (GA), fructosamine (FA), and 1,5-anhydroglucitol (1,5-AG), along with antioxidant markers (glutathione and alpha-tocopherol). Findings indicated that HbA1c remains the most reliable indicator of glycemic status, with a strong correlation to FBG ($r^2 = 0.99$). GA and FA demonstrated utility as short-term markers but were less robust than HbA1c. Notably, FBG and 1,5-AG showed inverse correlations, suggesting their potential for assessing short-term glycemic fluctuations. Insulin levels were the only statistically significant differential marker among diabetes types. These results support incorporating multiple biomarkers into diagnostic frameworks, particularly where HbA1c reliability may be limited (e.g., anemia or renal dysfunction). **This revision adds demographic details, highlights statistical significance, and emphasizes practical implications, making the abstract more comprehensive and impactful.**	
Is the manuscript scientifically, correct? Please write here.	The manuscript is scientifically correct in its methods and interpretations, with findings supported by statistical evidence and aligned with existing diabetes research. However, the following areas could be improved to meet the highest scientific standards: Expand the sample size and demographic diversity. Conduct longitudinal or interventional studies to establish causality. Provide more context-specific insights into the practical applications of alternative biomarkers. In its current state, the study contributes valuable regional data and supports the utility of complementary glycemic biomarkers, but some limitations restrict its broader impact.	
Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	The references provided in the manuscript are relevant to the study and cover a range of foundational and clinical research topics related to diabetes biomarkers. However, there are areas for improvement regarding the sufficiency and recency of references: **Strengths** Diverse Coverage:The references include studies on glycation markers (HbA1c, GA, FA) and antioxidants, aligning well with the manuscript's focus. Inclusion of Global and Regional Data: References like the International Diabetes Federation's report ensure a connection to global diabetes prevalence, while studies on Nigeria provide local relevance. Established Guidelines: Cited works such as the American Diabetes Association’s guidelines enhance the manuscript's credibility. **Limitations**	

	Recency: Several references date back more than a decade (e.g., studies from the 1990s and early 2000s). While these foundational studies are valuable, the rapidly evolving field of diabetes biomarkers warrants more recent citations. Insufficient Coverage of Alternatives to HbA1c: The manuscript could benefit from citing newer research on GA, FA, and 1,5-AG as alternatives to HbA1c, particularly studies focusing on their integration into clinical practice. Underrepresentation of Oxidative Stress Markers: References on the role of GSH and alpha-tocopherol in diabetes management appear limited. Recent studies exploring the link between diabetes and oxidative stress could enhance this section. Lack of Systematic Reviews and Meta-Analyses: Including recent reviews or meta-analyses on glycemic biomarkers would strengthen the manuscript's theoretical foundation. While the manuscript's references are adequate, adding newer studies, especially systematic reviews and meta-analyses, will improve its relevance and alignment with current scientific advancements. Including recent works on oxidative stress, alternative biomarkers, and regional/global comparisons would enhance the depth and rigor of the manuscript.	
Is the language/English quality of the article suitable for scholarly communications?	Yes	
Optional/General comments		

PART 2:

	Reviewer's comment	**Author's comment** ***(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)***
Are there ethical issues in this manuscript?	***(If yes, Kindly please write down the ethical issues here in details)***	

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