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Estimation of Glycemic Index of a Probiotic Enriched Smoothie Bowl

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Abstract: The rising burden of non-communicable diseases, particularly type 2 diabetes, underscores the importance of dietary interventions that modulate postprandial glycemia, with low glycemic index (GI) foods playing a key role in improving insulin sensitivity. While ingredients such as oats, whey protein, and probiotics individually show glycemic benefits, limited evidence exists on their combined effect in a single functional food. This study was undertaken to develop and standardize a probiotic-enriched smoothie bowl, evaluate its sensory acceptability, and estimate its GI in healthy young adults. The research was conducted in three phases: formulation and standardization of the smoothie using oats, whey protein isolate, milk, sugar, and a powdered probiotic blend; sensory evaluation of five variants (R1–R5) by semi-trained subjects and consumers using a 9-point hedonic scale; and GI testing of the most acceptable variant (R5) as per FAO/WHO (1998) protocol. Fifteen healthy participants (18–35 years) consumed the reference food (50 g glucose), the probiotic smoothie, and in a subgroup (n=5), a non-probiotic version, with capillary blood glucose measured at intervals up to 120 minutes for incremental area under the curve (iAUC) calculation. The. GI of the probiotic enriched smoothie variation [38.3 (11.4)] was estimated to be significantly lower than the non probiotic smoothie variation [67.3 (12.4), p=0.063]. The observed differences highlight the distinct impact of probiotic fortification on glycemic outcomes compared to standard and reference foods. In conclusion, the developed probiotic-enriched smoothie bowl was well accepted and demonstrated favorable glycemic properties, suggesting its potential as a functional dietary option for supporting glycemic control.
Keywords: Glycemic Index, Probiotic-Enriched Smoothie Bowl, Functional Food, Postprandial Glycemia.

I. INTRODUCTION

The glycemic index (GI) has become a widely used nutritional tool to evaluate the quality of carbohydrate-rich foods based on their impact on postprandial blood glucose levels. Glycemic index (GI), defined as the incremental area under the blood glucose response curve (iAUC) following consumption of 50 g available carbohydrates from a test food, is expressed as a percentage of the iAUC from a reference food like glucose. GI serves as a valuable indicator in dietary planning and chronic disease prevention [1]. Low GI foods are known to improve insulin sensitivity, lipid metabolism and long term glycemic control, and their regular inclusion in diets has been associated with reduced risks of type 2 diabetes and cardiovascular disease [2,3].

In recent years, the burden of non communicable diseases (NCDs) in India has increased dramatically, accounting for nearly 66% of total deaths, as reported by the World Health Organization (2024) [4]. These include cardiovascular diseases, cancers, chronic respiratory conditions and diabetes, which collectively strain healthcare resources and affect quality of life. The Indian Council of Medical Research (ICMR) has identified a significant rise in metabolic risk factors such as obesity and elevated fasting plasma glucose across both urban and rural populations [5]. The number of diabetes cases in India is expected to surpass 100 million by 2030, fueled by rapid urbanization, reduced physical activity, and dietary shifts towards energy dense, low nutrient foods [6]. In this context, the glycemic index offers a science based framework to develop and promote dietary strategies that can mitigate metabolic risk. Numerous intrinsic and extrinsic factors influence a food's GI, including starch structure, processing method, cooking time, particle size, acidity and the presence of dietary fiber, fat and protein [7]. For example, amylose slows starch digestion and lowers glycemic response, whereas amylopectin is rapidly digested, increasing GI. Processing methods such as gelatinization increase digestibility and GI, while cooling and retrogradation have the opposite effect. Protein and fat slow gastric emptying and glucose absorption, further modifying postprandial responses. Hence, GI estimation must account for these variables to ensure accurate, reproducible results.

Parallel to the development of GI based dietary strategies is the rise in interest surrounding probiotics defined by the International Scientific Association for Probiotics and Prebiotics as “live microorganisms that, when administered in adequate amounts, confer a health benefit on the host”. Common strains include Lactobacillus and Bifidobacterium, which have shown benefits ranging from improved gut health to modulation of immune responses [8,9]. Probiotics also influence glycemic regulation by altering gut microbiota composition, enhancing intestinal barrier function, and improving insulin sensitivity [10]. The integration of probiotics into everyday food products is expanding and these products address the needs of a palatable, nutrient-dense platform for probiotic delivery. [11].

Recent advances in food technology, including microencapsulation and nanoencapsulation, have further improved the stability and targeted delivery of probiotics in functional foods, making them more viable for metabolic health applications [8]. Among contemporary health trends, smoothie bowls have gained popularity due to their nutrient density, customizability and convenience [10]. However, despite the increasing availability of probiotic enriched food products, limited data exists on their glycemic response, especially in combination food formulations such as smoothie bowls.

Given the global and national rise in metabolic disorders and the parallel interest in functional foods, there is a clear need to evaluate how composite, probiotic enriched food products influence glycemic response. This study aimed to address this gap by developing a standardised probiotic-enriched smoothie bowl formulation and estimating its glycemic index in healthy adults, aged 18-35 years in Mumbai.

II. METHODOLOGY

The study was conducted in three phases: (1) development and standardization of a probiotic enriched smoothie bowl, (2) sensory evaluation of the developed formulations, and (3) estimation of glycemic index (GI). Healthy adults aged 18–35 years were recruited through convenience sampling. A total of 18 participants took part in sensory evaluation, while 15 subjects (equal number of males and females) participated in GI testing. Individuals with diabetes, chronic illness, food allergies, lactose intolerance, pregnancy, or lactation were excluded. The study received ethical approval from the Intersystem Biomedica Ethics Committee (ISBEC), and written informed consent was obtained from all participants prior to recruitment.

During the first phase of product development, a smoothie was prepared using oats, milk, chocolate flavored whey protein isolate and a powdered probiotic blend (The Good Bug – Metabolically Lean HRX, containing Lactobacillus and Bifidobacterium; 16 billion CFU per 2 g sachet). Seventeen trials were conducted to standardize the recipe formulation for the most acceptable taste, texture and consistency while ensuring each serving provided 50 g available carbohydrate for GI estimation.

The summary of variations developed during the first phase of the study is provided in Table 1.

Table 1: Recipe Formulation Variations of Probiotic-Enriched Smoothie Bowl

Trial No.	Ingredients				
	Oats (g)	Milk (ml)	Whey Protein (g)	Probiotics (g)	Sugar (g)
R1	55	150	17	2	4
R2	55	100	17	2	7
R3	60	150	17	2	1
R4	55	150	15	2	5
R5	60	150	15	2	3

Sensory evaluation was carried out in a controlled laboratory setting using a 9 point hedonic scale. Twelve semi trained panelists assessed the formulations (R1–R5) for appearance, taste, texture, aroma and overall acceptability.

Glycemic index testing was performed according to FAO/WHO (1998) protocol [12]. On Day 1, participants consumed 50 g glucose (reference food) under fasting conditions, and capillary blood glucose was measured at 0, 15, 30, 45, 60, 90, and 120 minutes using a glucometer (Accu-Chek). After a 2-day washout, on Day 4, participants consumed the test food (R5), and blood glucose was measured at identical time points. A subgroup of five participants also consumed a non-probiotic version of the smoothie on Day 7 for comparative analysis. Mean blood glucose responses were used to calculate the incremental area under the curve (iAUC), and GI was derived relative to glucose. Figure 1 shows the flow of the study.

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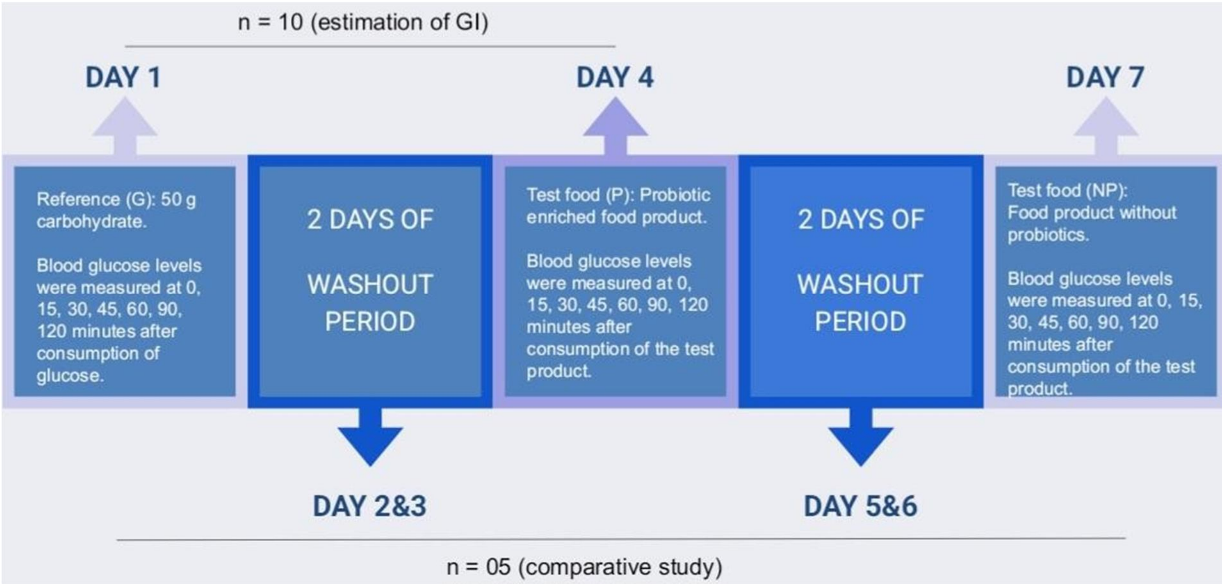
Figure 1. Flow of the Study



A. Data Analysis

The data collected during the sensory evaluation and blood glucose assessments were analyzed using descriptive statistics such as One-Way ANOVA (Welch's) and Paired Samples T-Tests. GI values were estimated as mean (SD), and differences between probiotic and non-probiotic versions were compared using paired samples t-tests with p values <0.05 considered as measure of statistical significance.

III. RESULT

A total of 18 participants (aged 18–35 years) took part in sensory evaluation and 15 participants completed glycemic index (GI) testing. During product development, five formulations (R1–R5) were standardized and subjected to sensory evaluation. The mean sensory scores of R1–R3 (range of 5 - 6.8) indicated moderate acceptability, with participants suggesting improvements in texture and palatability. Modifications were subsequently made in the recipe formulation and the developed R4 and R5 versions were tested for sensory evaluation among the same participants (n=18). Of all variations, R5 demonstrated the highest scores for taste, texture, appearance, aroma, and overall acceptability, making it the most preferred variant (Table 2).

Table 2: Sensory Evaluation of Product Variants R1, R2, R3, R4, R5

Product	Appearance	Aroma	Texture	Taste	Overall Acceptability
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
R1	6.2 (1.3)	5.9 (1.0)	6.1 (1.2)	6.2 (1.8)	6.1 (1.5)
R2	6 (1.7)	6.2 (1.1)	5.8 (1.9)	6.8 (1.6)	6.4 (1.7)
R3	6.2 (1.7)	6 (0.8)	5.7 (1.5)	4.4 (1.7)	5.0 (1.5)
R4	5.8 (0.7)	6 (0.6)	5.8 (1.2)	5 (0.9)	5.5 (0.5)
R5	5.8 (0.7)	6 (0.6)	6.2 (1.2)	5.7 (1.0)	6.3 (0.8)

For GI testing, participants consumed both the reference food (50 g glucose) and the final probiotic smoothie (R5). Blood glucose responses were monitored at fasting and postprandial intervals. Mean blood glucose values across time points are shown in Table 3.

Table 3: Mean Blood Glucose Parameters of Participants for Estimation of Glycemic Index

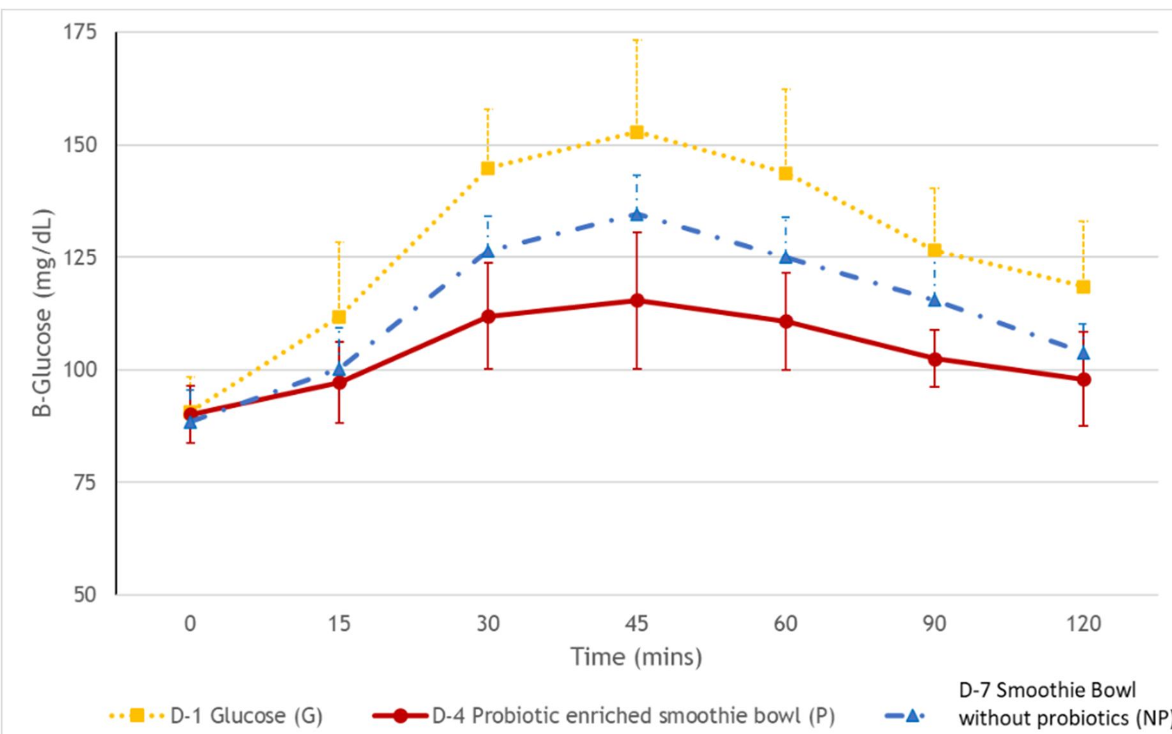
	0 min	15 min	30 min	45 min	60 min	90 min	120 min
D-1 Glucose (G)_Mean (SD)	90.6 (7.6)	111.7 (16.7)	144.8 (13.1)	152.8 (20.5)	143.7 (18.6)	126.5 (13.9)	118.4 (14.6)
D-4 Probiotic enriched smoothie bowl (P)_Mean (SD)	90.1 (6.4)	97.2 (8.9)	111.9 (11.7)	115.4 (15.2)	110.7 (10.8)	102.4 (6.3)	97.9 (10.5)
D-7 Smoothie Bowl without probiotics (NP)_Mean (SD)	88.4 (7.0)	100.2 (9.1)	126.4 (7.7)	134.6 (8.5)	125 (8.9)	115.4 (10.1)	103.8 (6.3)

Note: Data are presented as mean (SD) for participants (n=15).
G = Glucose (reference), P = Probiotic-enriched smoothie bowl, NP = Smoothie bowl without probiotics. Measurements were taken at defined time intervals post ingestion.

The glucose reference food exhibited a higher and sharper rise in blood glucose as compared to the probiotic smoothie version R5. The corresponding blood glucose curves are illustrated in

Figure 2.

Figure 2: Blood Glucose Response Curves for Glucose, Probiotic Smoothie and Non-Probiotic Smoothie.



The incremental area under the curve (iAUC) and calculated GI values confirmed that the probiotic-enriched smoothie bowl had a low GI (35.7 ± 12.7) (Annexure A). Among the subgroup (n = 5) tested with both probiotic and non-probiotic versions, the mean GI of the probiotic formulation (44.4 ± 5.4) was significantly lower than that of the non-probiotic version (67.3 ± 11.8), highlighting the role of probiotics in glycemic attenuation (Table 4).

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Table 4: iAUC of the Reference Food: Glucose (G), Test Food: Probiotic-Enriched Smoothie Bowl (P) and Comparative Test Food: Smoothie Bowl without probiotics (NP) and Glycemic Index of the Probiotic-Enriched Smoothie Bowl and Glycemic Index of the Smoothie Bowl without probiotics for the 5 Participants who participated in the comparative study

Sr. No.	iAUC reference food (G)	iAUC test food (P)	iAUC comparative test food (NP)	GI (P)	GI (NP)
1	2895	1042.5	1447.5	36.0	50.0
2	7680	3457.5	4605	45.0	60.0
3	4980	2475	3495	49.7	70.2
4	4350	1972.5	3270	45.3	75.2
5	4575	2115	3705	46.2	81.0

Note: iAUC values and corresponding GI values for both test products were calculated for five participants who underwent paired testing. GI values were derived as a percentage of the iAUC of the reference food.

IV. DISCUSSION

The present study demonstrated that the developed probiotic-enriched smoothie bowl had a low glycemic index of 35.7 (12.7), consistent with the well documented glycemic-lowering potential of the formulation's individual ingredients such as oats, whey protein, and probiotics [13, 14, 16]. Oats are widely recognized for their high content of soluble fiber, particularly β-glucan, which increases intestinal viscosity, slows gastric emptying, and reduces starch hydrolysis, thereby attenuating postprandial glycemia [13]. Our findings align with previous trials reporting that oat based meals produce lower postprandial blood glucose responses compared to refined cereals [13].

Whey protein is known to stimulate insulin secretion due to its high branched-chain amino acid content, particularly leucine, and to enhance incretin hormone release, such as GLP-1, which collectively improve postprandial glucose control [14]. The inclusion of whey protein isolate in our recipe formulation may also have contributed to the observed glycemic attenuation.Thus, the combination of protein and soluble fiber in the smoothie matrix likely exerted a synergistic effect in lowering glycemic response.

Moreover, we observed significantly lower GI values of probiotic enriched version, as compared to the non probiotic version, highlighting the therapeutic potential of probiotic enriched composite recipes to lower glycemic response in healthy individuals. This finding concurs with existing evidence from randomized controlled trials where Lactobacillus casei supplementation reduced fasting blood glucose and improved insulin sensitivity through modulation of SIRT1 and fetuin-A pathways [15]. Similarly, systematic reviews and meta-analyses have confirmed that multi-strain probiotics can significantly lower fasting blood glucose, insulin, and HOMA-IR scores in individuals with diabetes [16, 17]. These results reiterate the emerging role of probiotics in glycemic regulation, even in healthy adults.

The mechanisms underlying this effect may involve improved gut barrier function [17], reduced endotoxemia, and increased production of short-chain fatty acids (SCFAs) [17], which are likely to collectively improve insulin sensitivity and modulate glucose metabolism [18]. Specific strains such as Bifidobacterium lactis and Lactobacillus reuteri, included in the developed formulation in our study, are known to modulate gut microbiota composition and promote GLP-1 secretion, contributing to reduced glycemic excursions [19].

A significant strength of our investigation was that the smoothie bowl format provided a composite food matrix combining oats, whey protein, and probiotics. Studies have shown an increasing interest and consumption of nutrient dense bowls among health conscious adults seeking on-the-go, clean and satiating, healthy breakfast options. Previous literature highlights that estimation of glycemic response of such synergistic formulations are underexplored, as most studies have examined these components individually [20]. The current findings address this gap and support the feasibility of smoothie-based interventions for metabolic health.

Overall, the results of this study suggest that probiotic enrichment of a low-GI base food such as oats can further enhance glycemic benefits. This has practical implications for designing functional foods targeted at individuals at risk of type 2 diabetes and metabolic syndrome.

However, the findings are based on a small sample size of young healthy adults, and further studies with larger and more diverse populations, as well as long-term interventions, are warranted to validate these effects.

V. CONCLUSION

The probiotic-enriched smoothie bowl developed in this study was well accepted and classified as a low-GI food. Our findings demonstrated that the combination of oats, whey protein, and probiotics worked synergistically to reduce postprandial blood glucose levels compared to the non-probiotic variation. The results suggest that such functional food formulations may serve as practical dietary options for supporting glycemic control in young adults who often rely on fast foods, packaged snacks, and sugary beverages due to convenience and taste. Future research with larger, more diverse populations and longer follow-up periods is needed to confirm these benefits and explore the potential role of functional probiotic enriched smoothie bowls in dietary management of metabolic health.

BIBLIOGRAPHY

[1] Wolever TMS, Jenkins DJA, Jenkins AL & Josse RG (1991): The glycemic index: methodology and clinical implications. Am. J. Clin. Nutr. 54, 846 – 854.

[2] Jenkins, D. J. A., Kendall, C. W. C., Augustin, L. S. A., Franceschi, S., Hamidi, M., Marchie, A., Jenkins, A. L., & Axelsen, M. (2002). Glycemic index: Overview of implications in health and disease. The American Journal of Clinical Nutrition, 76(1), 266S–273S. https://doi.org/10.1093/ajcn/76.1.266S

[3] Brouns, F., Björck, I., Frayn, K. N., Gibbs, A. L., Lang, V., Slama, G., & Wolever, T. M. S. (2005). Glycaemic index methodology. Nutrition Research Reviews, 18(1), 145–171.

[4] WHO. (2024). Noncommunicable diseases.

[5] https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseasesICMR, PHFI & IHME. (2017). India: Health of the Nation's States—The India State-Level Disease Burden Initiative. https://phfi.org/india-health-of-the-nations-states/

[6] Tandon, N., et al. (2018). The increasing burden of diabetes and variations among the states of India: The Global Burden of Disease Study 1990–2016. The Lancet Global Health, 6(12), e1352–e1362.

[7] Eleazu CO. The concept of low glycemic index and glycemic load foods as panacea for type 2 diabetes mellitus; prospects, challenges and solutions. Afr Health Sci. 2016 Jun;16(2):468-79. doi: 10.4314/ahs.v16i2.15. PMID: 27605962; PMCID: PMC4994556. https://pmc.ncbi.nlm.nih.gov/articles/PMC4994556/

[8] Latif A, Shehzad A, Niazi S, Zahid A, Ashraf W, Iqbal MW, Rehman A, Riaz T, Aadil RM, Khan IM, Özogul F, Rocha JM, Esatbeyoglu T, Korma SA. Probiotics: mechanism of action, health benefits and their application in food industries. Front Microbiol. 2023 Aug 17;14:1216674. doi: 10.3389/fmicb.2023.1216674. Erratum in: Front Microbiol. 2024 Feb 14;15:1378225. doi: 10.3389/fmicb.2024.1378225. PMID: 37664108; PMCID: PMC10470842. https://pmc.ncbi.nlm.nih.gov/articles/PMC10470842/#sec1

[9] Hill C, Guarner F, Reid G, Gibson GR, Merenstein DJ, Pot B, Morelli L, Canani RB, Flint HJ, Salminen S, Calder PC, Sanders ME. Expert consensus document. The International Scientific Association for Probiotics and Prebiotics consensus statement on the scope and appropriate use of the term probiotic. Nat Rev Gastroenterol Hepatol. 2014 Aug;11(8):506-14. doi: 10.1038/nrgastro.2014.66. Epub 2014 Jun 10. PMID: 24912386. https://pubmed.ncbi.nlm.nih.gov/24912386/

[10] Moroti C, Souza Magri LF, de Rezende Costa M, Cavallini DC, Sivieri K. Effect of the consumption of a new symbiotic shake on glycemia and cholesterol levels in elderly people with type 2 diabetes mellitus. Lipids Health Dis. 2012 Feb 22;11:29. doi: 10.1186/1476-511X-11-29. PMID: 22356933; PMCID: PMC3305430. https://pmc.ncbi.nlm.nih.gov/articles/PMC3305430/

[11] Rahman MS, Emon DD, Toma MA, Nupur AH, Karmoker P, Iqbal A, Aziz MG, Alim MA. Recent advances in probiotication of fruit and vegetable juices. J Adv Vet Anim Res. 2023 Sep 30;10(3):522-537. doi: 10.5455/javar.2023.j706. PMID: 37969792; PMCID: PMC10636081. https://pmc.ncbi.nlm.nih.gov/articles/PMC10636081/#sec15

[12] FAO/WHO. (1998). Carbohydrates in human nutrition. Report of a joint FAO/WHO expert consultation. FAO Food and Nutrition Paper 66.

[13] Zhang K, Dong R, Hu X, Ren C, Li Y. Oat-Based Foods: Chemical Constituents, Glycemic Index, and the Effect of Processing. Foods. 2021 Jun 7;10(6):1304. doi: 10.3390/foods10061304. PMID: 34200160; PMCID: PMC8229445. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8229445/

[14] Petersen BL, Ward LS, Bastian ED, Jenkins AL, Campbell J, Vuksan V. A whey protein supplement decreases post-prandial glycemia. Nutr J. 2009 Oct 16;8:47. doi: 10.1186/1475-2891-8-47. PMID: 19835582; PMCID: PMC2766379. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2766379/

[15] Khalili L, Alipour B, Asghari Jafar-Abadi M, Faraji I, Hassanalilou T, Mesgari Abbasi M, Vaghef-Mehrabany E, Alizadeh Sani M. The Effects of Lactobacillus casei on Glycemic Response, Serum Sirtuin1 and Fetuin-A Levels in Patients with Type 2 Diabetes Mellitus: A Randomized Controlled Trial. Iran Biomed J. 2019 Jan;23(1):68-77. doi: 10.29252/.23.1.68. Epub 2018 May 27. PMID: 29803203; PMCID: PMC6305821. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6305821/sec1-3title

[16] Ruan Y, Sun J, He J, Chen F, Chen R, Chen H. Effect of Probiotics on Glycemic Control: A Systematic Review and Meta-Analysis of Randomized, Controlled Trials. PLoS One. 2015 Jul 10;10(7):e0132121. doi: 10.1371/journal.pone.0132121. PMID: 26161741; PMCID: PMC4498615. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4498615/

[17] Li G, Feng H, Mao XL, Deng YJ, Wang XB, Zhang Q, Guo Y, Xiao SM. The effects of probiotics supplementation on glycaemic control among adults with type 2 diabetes mellitus: a systematic review and meta-analysis of randomised clinical trials. J Transl Med. 2023 Jul 6;21(1):442. doi: 10.1186/s12967-023-04306-0. PMID: 37415167; PMCID: PMC10324246. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10324246/Sec2title

[18] Wang X, Chen L, Zhang C, Shi Q, Zhu L, Zhao S, Luo Z, Long Y. Effect of probiotics at different intervention time on glycemic control in patients with type 2 diabetes mellitus: a systematic review and meta-analysis. Front Endocrinol (Lausanne). 2024 Jul 24;15:1392306. doi: 10.3389/fendo.2024.1392306. PMID: 39114293; PMCID: PMC11303337. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC11303337/s2title

[19] Ejtahed HS, Mohtadi-Nia J, Homayouni-Rad A, Niafar M, Asghari-Jafarabadi M, Mofid V. Probiotic yogurt improves antioxidant status in type 2 diabetic patients. Nutrition. 2012 May;28(5):539-43. doi: 10.1016/j.nut.2011.08.013. Epub 2011 Nov 29. PMID: 22129852. https://pubmed.ncbi.nlm.nih.gov/22129852/

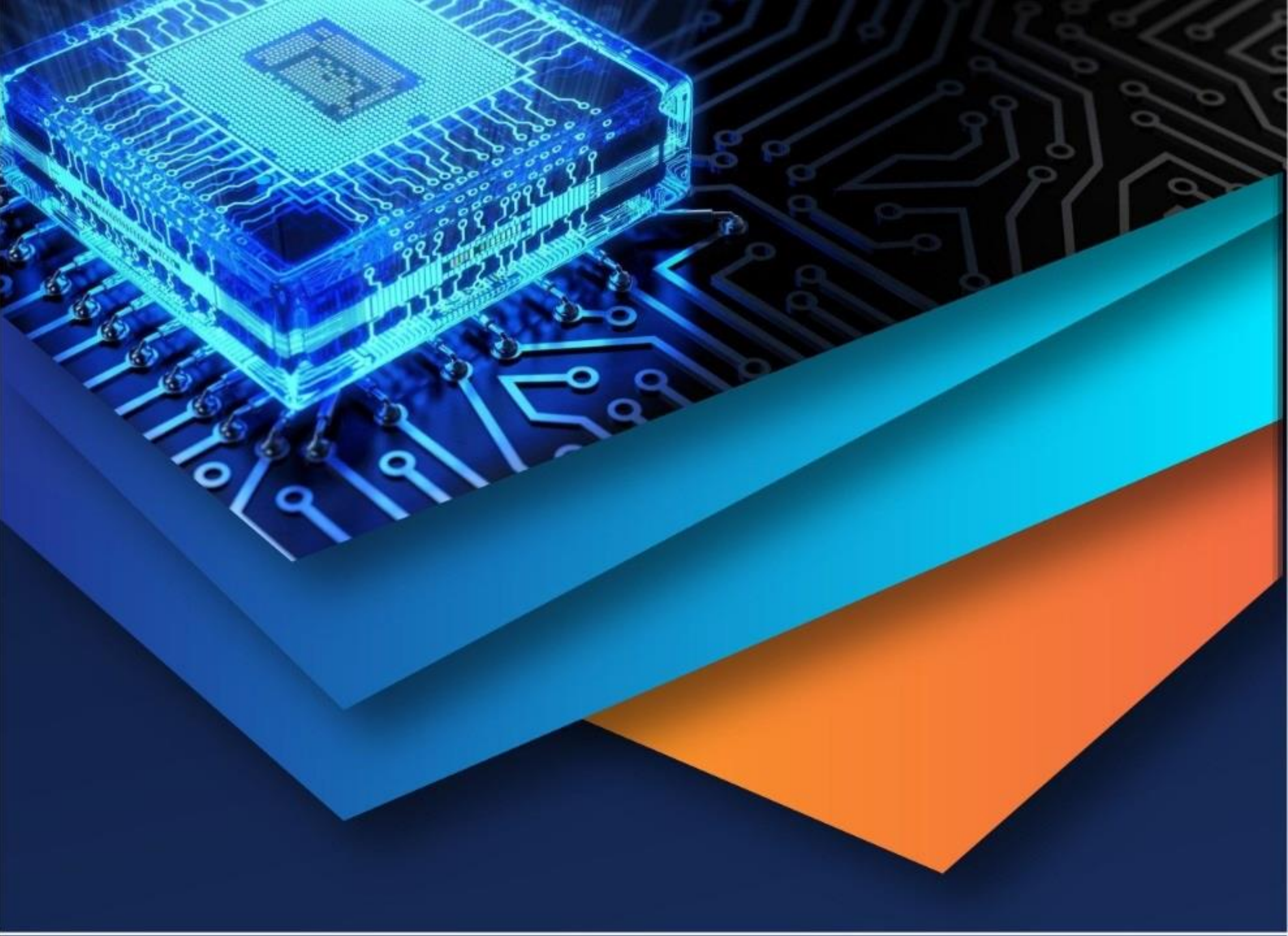
[20] Rittiphairoj, T., Pongpirul, K., Janchot, K., Mueller, N. T., & Li, T. (2020). Probiotics contribute to glycemic control in patients with type 2 diabetes mellitus: A systematic review and meta-analysis. Advances in Nutrition https://www.researchgate.net/publication/346574563_Probiotics_Contribute_to_Glycemic_Control_in_Patients_with_Type_2_Diabetes_Mellitus_A_Systematic_Review_and_Meta-Analysis

ANNEXURE A

Table: iAUC of the Reference Food: Glucose (G) and Test Food: Probiotic-Enriched Smoothie Bowl (P) and Glycemic Index of the Probiotic-Enriched Smoothie Bowl for the 10 Participants who did not participate in the comparative study

Sr. No.	iAUC reference food (G)	iAUC test food (P)	Glycemic Index
1	6832.5	465	6.8
2	2737.5	1020	37.3
3	3217.5	1687.5	52.4
4	4102.5	1582.5	38.6
5	4537.5	1530	33.7
6	7695	3435	44.6
7	5100	1207.5	23.7
8	4575	2062.5	45.1
9	3142.5	1125	35.8
10	4860	1650	34.0

Note: Incremental area under the curve (iAUC) was calculated using the trapezoidal rule. GI was calculated as (iAUC of test food / iAUC of reference food) × 100 for each participant.



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