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| Journal Name: | [**Asian Food Science Journal**](https://journalafsj.com/index.php/AFSJ) |
| Manuscript Number: | **Ms\_AFSJ\_137441** |
| Title of the Manuscript: | **Development and physicochemical analysis of gum bead base protein fortified beverage** |
| Type of the Article |  |

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| PART 1: Comments | | |
|  | Reviewer’s comment **Artificial Intelligence (AI) generated or assisted review comments are strictly prohibited during peer review.** | **Author’s Feedback** (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 th is part.** | This manuscript is significant for the scientific community as it advances the development of functional beverages using encapsulation technology to enhance protein delivery, addressing protein-energy malnutrition. It provides valuable insights into the sensory, nutritional, and stability properties of whey protein beads in ready-to-serve (RTS) beverages, contributing to food science and nutrition research. The study’s focus on consumer-preferred sensory attributes and nutritional fortification aligns with the growing demand for innovative, health-promoting food products. It also opens avenues for further exploration of encapsulation techniques in personalized nutrition. | This manuscript is important because it pays attention towards practical way to make protein-rich functional beverages more appealing and effective through encapsulation technology. By focusing on whey protein beads, it will help us to deal with issues like protein-energy malnutrition. With the new experience of taste and texture would help nutritious and sensory acceptable drink. This would also help new exposure to personalized nutrition option in future. |
| **Is the title of the article suitable?**  **(If not please suggest an alternative title)** | The title is suitable as it clearly reflects the study’s focus on developing a protein-fortified beverage using gum-based beads and analyzing its physicochemical properties. However, it could be more concise for clarity.  Suggested Alternative: "Development and Physicochemical Analysis of Protein-Fortified Bead-Based Functional Beverage." | The suggested alternative “Development and Physicochemical Analysis of Protein-Fortified Bead-Based Functional Beverage” effectively reflects the study focus and will adopt this revised title to enhance readability and precision. |
| 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 is generally comprehensive, summarizing the study’s objectives, methods, key findings (sensory evaluation and proximate analysis), and implications. However, it lacks specific details about the encapsulation process (e.g., use of sodium alginate and calcium chloride) and could briefly mention the shelf-life study results to highlight stability. Suggestions:  Add: A brief mention of the encapsulation materials (sodium alginate and calcium chloride) and a note on shelf-life stability (e.g., "Stable for up to 14 days under refrigeration").  Delete: The phrase "consumer aesthetic without compromising the nutritional benefits" is vague and could be rephrased for clarity, e.g., "appealing sensory attributes with enhanced nutritional value." | We have revised the abstract to specific mentions about encapsulating agent sodium alginate and calcium chloride. We have also mentioned about stability of beverage under refrigerated condition 14 days. The phrase “consumer’s aesthetic” has been rephrased “appealing sensory attribute with enhanced nutritional value”. |
| Is the manuscript scientifically, correct? Please write here. | The manuscript is scientifically sound overall, with a clear methodology, reproducible experiments, and statistically analyzed results. The use of whey protein concentrate (WPC) encapsulated in sodium alginate beads is well-supported by references (e.g., Lupo et al., 2015; Chan et al., 2011). The sensory evaluation, proximate analysis, and shelf-life study are methodologically robust, with statistical significance assessed using ANOVA and Duncan’s test (p < 0.05). However, minor issues include:  The manuscript does not discuss potential limitations, such as the impact of bead size or encapsulation efficiency on protein release.  The shelf-life study mentions microbial growth after 14 days but lacks specific microbial identification, which could strengthen the findings.  Some claims (e.g., "promising demand in the functional beverage category") lack supporting market or consumer survey data. | We have incorporated short discussion on how bead size and ecapsulation effeciency mght affect protein release based on refernces for clarity. We also recognise that it lacks about microbial identiication but are research stares about microbial growth trends. We have noted as this as critical area for future investigation. The term"promising demand in the functional beverage category" has been rephrased but avoid unsupporting market assumptions. |
| **Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.** | The references are sufficient and cover relevant topics, including protein nutrition (Bauer et al., 2013; Wu, 2016), encapsulation technology (Chan et al., 2011; Lupo et al., 2015), and sensory evaluation (Ganesan & Weerakkody, 2021). Most references are recent (within the last 10-15 years), with some older ones (e.g., Hariyadi & Parkin, 1991) justified by their foundational relevance.  **Suggestions for Additional References**:   * Nedovic, V., et al. (2011). "Encapsulation systems in the food industry: Perspectives and challenges." *Procedia Food Science*, 1, 1666–1672. (For broader context on encapsulation in beverages.) * McClements, D. J. (2015). "Advances in beverage emulsions: Design and applications." *Current Opinion in Food Science*, 4, 90–95. (To support beverage formulation discussions.) | We have added the references and also strengthen the background and relevance of paper |
| Is the language/English quality of the article suitable for scholarly communications? | The language is generally suitable but requires minor improvements for clarity and scholarly tone. Some sentences are verbose or awkwardly phrased (e.g., "The consumer aesthetic without compromising the nutritional benefits was focused as a key feature" in the abstract). There are also minor grammatical errors, such as "Thegum" (should be "The gum") and inconsistent spacing in phrases like "Blue Curacao protein bead beverage."  **Recommendation**: A thorough proofreading to enhance clarity and correct minor errors is needed. | We have revised abstract and fixed grammatical errors to improve clarity and readability of paper |
| Optional/General comments | The manuscript is well-structured, with clear sections for introduction, materials and methods, results, and discussion. The use of tables and figures (e.g., Table 2 for proximate composition, Figure 1 for sensory evaluation) enhances readability.  The study could benefit from discussing encapsulation efficiency or protein release kinetics to strengthen its scientific rigor.  Including a brief consumer market analysis or pilot study could support claims about the beverage’s potential demand.  The flowchart (Flowchart 1) is helpful but could be improved with a caption or more detailed steps (e.g., specifying gelation conditions). | - Market analysis at last stage of research is not possible to include. Rest all other points are well incorporated |

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| **PART 2:** | | |
|  | Reviewer’s comment | **Author’s Feedback** (It is mandatory that authors should write his/her feedback here) |
| **Are there ethical issues in this manuscript?** |  |  |