

# SARIF ISTIAK AKASH

Food Engineering | Bioethanol, Phytochemical and Bioactive Compounds Valorization from Agro-Waste |

8 Peer Reviewed Publications

Bangladesh Agricultural University, Mymensingh-2202

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## RESEARCH INTEREST

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- Structural bioinformatics and enzymology of food proteins: applying molecular docking, dynamics simulations, and site-directed mutagenesis to tailor protein–polyphenol/enzyme interactions for enhanced functionality and stability in sustainable food systems.
- Sustainable bioprocessing and waste-to-value technologies for the circular bioeconomy.
- Second-generation bioethanol production and fermentation optimization using agro-industrial residues.
- Phytochemical recovery and antioxidant preservation for functional foods and nutraceuticals.
- Food safety, dietary exposure assessment, and risk characterization in low-resource settings.

## EDUCATION

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### ▪ Master of Science in Food Engineering

Bangladesh Agricultural University, Mymensingh, Bangladesh

Oct 2023 - Mar 2025

**CGPA:** 3.875 (out of 4.00) **Merit Position:** 1<sup>st</sup>

- **Thesis:** Optimization of bioethanol production from cashew apple juice using Response Surface Methodology (RSM)

### ▪ Bachelor of Science in Food Engineering

Bangladesh Agricultural University, Mymensingh, Bangladesh

Jan 2018 - Aug 2023

**CGPA:** 3.689 (out of 4.00) **Merit Position:** 2<sup>nd</sup>

**Undergrad Research Project:** Risk Assessment of Selective Additives in Processed Food Samples

Collected from Selected Area.

## RESEARCH EXPERIENCE

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### ▪ Research Assistant

**Project:** Development of Value-Added Products from Cashew Apple

Oct 2023 - Sep 2025

**Funded By:** Krishi Gobeshona Foundation (KGF)

**Key Responsibilities:**

- Led RSM-based optimization of bioethanol fermentation from cashew apple juice, achieving 7.6% (v/v) yield and 84% tannin removal using gelatin/starch fining.
- Quantified total phenols, flavonoids, and antioxidant capacity (DPPH IC<sub>50</sub>) via spectrophotometric and HPLC methods
- Designed and executed field-to-lab workflow for cashew apple collection, preservation, and phytochemical extraction.

- Analyzed data using R and Design-Expert; authored project reports and stakeholder workshops for technology transfer.

■ **Research Assistant**

*May 2020 - Apr 2021*

**Project:** Total Diet Study of Bangladesh: Analysis of contaminants, Toxins and Harmful Residues in the Foods and Assessment of Dietary Exposure

**Funded By:** FAO

**Key Responsibilities:**

- Performed multi-regional sampling and chemical analysis of artificial colors, preservatives, SO<sub>2</sub>, and aflatoxins in processed foods using HPLC-DAD, UV-Vis, and ELISA.
- Calculated dietary exposure (ADI, Hazard Index) for children and adults; contributed to national food-safety policy recommendations.

## PUBLICATIONS

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- JOURNAL ARTICLE (8 total, h-index: 3, i10-index: 2, Citation: 42 as of Nov, 2025)**
  - Altaf-Un-Nahar, M., Pretha, S. J., Akash, S. I., & Karim, M. R. (2026). Coordinated Postharvest Trait Networks in Green Chilli, Guava, and Tomato: Multivariate Insights into Physicochemical, Antioxidant, and Mineral Quality Retention under Household Storage. *Journal of Agriculture and Food Research*, 102686. DOI: <https://doi.org/10.1016/j.jafr.2026.102686>.
  - Most Altaf-Un-Nahar, Mohammad Zahir Ullah, Sadekul Islam, Proma Sen, Sarif Istiak Akash, Prince Biswas. Nutritional profile of thankuni (*Centella asiatica*) grown at Netrokona Bangladesh. *J Med Plants Stud* 2025;13(4):133-139. DOI: [10.22271/plants.2025.v13.i4b.1900](https://doi.org/10.22271/plants.2025.v13.i4b.1900)
  - Rafi, K. N., Aziz, M. G., Islam, M. A., Akash, S. I., Jakariya, M., & Rahman, M. (2025). Assessment of the bioaccessibility of zinc in the selected biofortified food grains. *Scientific Reports*, 15(1), 7457. DOI: [10.1038/s41598-024-67856-3](https://doi.org/10.1038/s41598-024-67856-3)
  - Pramanik, T., Mazumder, M. A. R., Jany, J. F., Akash, S. I., Rahman, A., & Bhuiyan, M. K. H. (2025). Functional yogurt: An approach to fortify yogurt by polyphenols extracted from Bengal currant. *Applied Food Research*, 5(1), 100715. DOI: [10.1016/j.afres.2025.100715](https://doi.org/10.1016/j.afres.2025.100715)
  - Jany, J. F., Nupur, A. H., Akash, S. I., Karmoker, P., Mazumder, M. A. R., & Alim, M. A. (2024). Fortification of functional yogurt by the phytochemicals extracted from pomegranate peel. *Applied Food Research*, 4(2), 100479. DOI: [10.1016/j.afres.2024.100479](https://doi.org/10.1016/j.afres.2024.100479)
  - Trisha, S., Mortuza, M. G., Rana, J., Islam, K. H., Ferdoush, Z., Antora, R. A. Akash, S.I., Aziz, M.G. and Uddin, M.B. (2023). Evaluation of the physicochemical qualities and antioxidant properties of some Bangladeshi varieties of honey: A comparative study. *Journal of Agriculture and Food Research*, 14, 100837. DOI: [10.1016/j.jafr.2023.100837](https://doi.org/10.1016/j.jafr.2023.100837)
  - Hasan, M. Z., Nupur, A. H., Habiba, U., Robin, M. A., Akash, S. I., Rawdkuen, S., & Mazumder, M. A. R. (2023). Incorporation of orange peel polyphenols in buttermilk, maltodextrin and gum acacia suspension improve its stability. *Food and Humanity*, 1, 1345-1354. DOI: [10.1016/j.foohum.2023.10.001](https://doi.org/10.1016/j.foohum.2023.10.001)
  - Aziz, M. G., Islam, M. R., Akash, S. I., & Uddin, M. B. (2022). Present Status and Future Scope of Improving Crude Salt Production in Bangladesh. *BIMRAD Journal*, 3, 01-14. Link: <https://doi.org/10.1016/j.bimrad.2022.01.001>

<https://bimradbd.org/journal/article/present-status-and-future-scope-of-improving-crude-salt-production-in-bangladesh>

- **BOOK CHAPTER**

1. **Akash, S.I.**, Yasmin, S., Jahan, I.T., Aziz, M.G. (2025). Production Scales and Industrial Production Processes of Dietary Supplements and Nutraceuticals: An Overview. In: Mukherjee, B. (eds) *Dietary Supplements and Nutraceuticals*. Springer, Singapore. DOI: [https://doi.org/10.1007/978-981-97-9936-7\\_30](https://doi.org/10.1007/978-981-97-9936-7_30)

## AWARD AND FUNDING

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- **National Science and Technology Fellowship** November 2024
- **Education Board Scholarship** 2010, 2012, 2015, 2017

## LABORATORIES AND DIGITAL SKILLS

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- Laboratory Skills: HPLC-DAD, UV-Vis Spectrophotometry, Fermentation scale-up, AOAC proximate analysis, DPPH/TPC/TFC assays, ELISA
- Computational & Statistical Skills R (Moderate), Graph pad Prism, XLSTAT, SPSS, Python (basic), GraphPad Prism
- Experimental Design, Statistical Analysis (ANOVA), Sustainable Food Systems, Grant Writing.

## LEADERSHIP & EXTRACURRICULAR ACTIVITIES

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- Vice President, BAU Food Engineering Club (2022–2024) – Increased membership 40% and organized 10+ club related programs
- Assistant Organizing Secretary, BAU Nutrition Club (2019–2023) – Coordinated public health campaigns reaching 500+ participants
- Volunteer Project Lead, Volunteer for Bangladesh (JAAGO Foundation), 2019–2022

## REFERENCES

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