

Importance of Advanced Analytical Techniques and Methods for Food Quality Control

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Introduction

By preparing and motivating chemists, chemistry education plays a crucial part in resolving the most important societal problems facing the world. However, due to a lack of both physical infrastructure and human resources, chemistry teaching and research are difficult in the least developed countries (LDCs). The LDCs are more likely to experience a variety of problems and difficulties, including food and herbal adulteration, micro-plastics pollution and chemical risks, all of which would make it difficult to meet the UN Sustainable Development Goals (SDGs). These societal problems are regularly discussed in the academics and social media of the LDCs and we think that progress in chemistry teaching and research could address at least some of these problems [1].

Description

Chemistry education plays a central role in solving the world's pressing societal issues by equipping and inspiring chemists. However, chemistry education and research in the least developed countries (LDCs) is challenging due to a lack of physical infrastructure and human resources. Among a range of issues and challenges, food and herbal adulteration, microplastics pollution and chemical hazards are more common in the LDCs and these issues would impede the achievement of the United Nations sustainable development goals (SDGs). These societal issues are frequently highlighted in the academia and social media of the LDCs and we believe that at least some aspects of these issues could be solved by advancement in chemistry education and research. However, the current chemistry education and research efforts are inadequate to address these societal issues in these countries.

To protect consumer health, it is crucial to implement food quality control measures to stop manufacturers, suppliers and distributors from contaminating or misusing food supplies. The initial selection of the food supply through its distribution all depend on maintaining a high standard for food quality control. Food production quality control entails a strict cycle of inspections as well as the use of and adherence to numerous food safety systems and practices. From the sourcing of raw ingredients through the delivery of completed items, the food industry deals with extremely sensitive products that necessitate routine inspection and quality control. Quality control has a direct impact on customer happiness, brand reputation and financial performance of the business. Therefore, preventing and fixing quality issues can result in superior products, an improved reputation for the brand and a larger consumer base. Companies are required to record every step of a product's real manufacturing process. This covers things like the best way to transport and store ingredients, the

ambient conditions the facility should maintain, the order in which ingredients are added, the instruments utilised and who is in charge of what. By including directions like "mix for 10 minutes after adding ingredient A" or "preheat oven to 200 degrees F," this differs from a product formulation or recipe. The job instructions for the staff are also included in these production methods.

Any production line will eventually have a defect. Businesses must therefore have a method for swiftly identifying and resolving these problems in order to avoid customer complaints or long-term product damage. This entails carrying out routine audits, keeping current records of client comments and establishing a method to monitor and address flaws. This is a particular improvement over proactive quality control systems since the data gathered from these problems can subsequently be utilised for future applications. A flaw will ultimately appear on every production line. Therefore, in order to prevent customer complaints or long-term product damage, businesses must have a process for quickly identifying and fixing these issues. This requires doing routine audits, maintaining up-to-date records of client feedback and creating a system to monitor and fix faults. This is a significant improvement over proactive quality control methods since the information gleaned from these issues can then be applied in the future.

There will eventually be a flaw on every production line. Businesses must therefore have a procedure for swiftly recognising and resolving these issues in order to avoid customer complaints or long-term product damage. To do this, it is necessary to conduct frequent audits, keep current records of client comments and develop a system to track and correct errors. Since the knowledge gained from these issues can subsequently be utilised in the future, this is a considerable advantage over proactive quality control methods.

A food's nutritional worth, purity, wholesomeness and palatability are used to assess its quality. The quality of the dish is impacted if any of these characteristics is subpar. Examining raw materials involves looking at their composition, authenticity and compliance with government or manufacturing requirements. It takes tight cooperation between plant breeders, agronomists, horticulturists and food technologists to produce a desired food product. A sample batch of raw materials is placed through a trial run when all raw material specifications are completed to gain a glimpse of the finished product. The sample is subjected to all control tests and any necessary alterations are then made to the final product [2-5].

Conclusion

In the food and beverage manufacturing and distribution industries, systems for food quality control and assurance are essential to the choice, preparation, packing and preservation of food. The methods used to test for food safety and quality can vary, but they frequently use techniques from a variety of industries, including biotechnology, microbiology and analytical chemistry. These testing techniques can be used to check for flaws and inconsistencies as well as to make sure that food sources are free of potentially dangerous bacteria and substances and that the final goods comply with applicable laws, regulations and business/industry standards.

Acknowledgement

None.

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Date of Submission: 28 June, 2022, Manuscript No. jgdr-22-78520; Editor Assigned: 01 July, 2022, PreQC No. P-78520; Reviewed: 12 July, 2022, QC No. Q-78520; Revised: 17 July, 2022, Manuscript No. R-78520; Published: 21 July, 2022, DOI: 10.37421/2472-0542.2022.8.425

Conflict of Interest

There are no conflicts of interest by author.

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How to cite this article: Aviara, Ndubisi. "Importance of Advanced Analytical Techniques and Methods for Food Quality Control." *J Exp Food Chem* 8 (2022): 425.