**Opinion**
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# Chemical Characterization of Food Products

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## Introduction

Rapid, nondestructive quantitative analysis of food ingredients is one of the main uses of IRS for food quality control. Groups of chemically or functionally related chemicals can be quantified, as well as main (water, protein, fat and carbs) and minor components. A multivariate regression model must be created for quantitative reasons using a particular set of IR spectrum wavelengths. Spot measurements of the target compound's concentration are provided by conventional IRS. If the element is evenly distributed throughout the sample or across its surface, this information can be applied to the entire test sample. In reality, the composition of a number of foods is varied [1].

## Description

NIRS and MIRS can also predict minor dietary components with respectable accuracy. In most cases, MIRS is preferable to NIRS for the prediction of dietary components that occur in lower concentrations. Examples include the amount of urea and free FA in milk (by MIRS), the amount of single FA in milk and beef (by NIRS and MIRS), the total amount of fibre in grains and cereal-based products (NIRS), the amount of soluble sugars and starch in a variety of food products (NIRS and MIRS), the amount of alcohol in wine and spirits (NIRS) and many more. Applications of IRS for the measurement of toxins and other dangerous substances have also been noted. Recently, the AOCS Cd 14d-99 and the AOAC technique were both recognised as official standards for the determination of trans fatty acid levels in food.

The processing process should be taken into consideration while processing. The use of the proper number of components, accurate technique of preparation, mixing, processing time and temperature, etc. should all be adhered to in order to obtain the result of the desired quality. A 24-hour production schedule should be executed in parallel with the quality control tests. The intermediate samples are collected for standard tests to confirm that particular quality goals are being met. The desired concentration, colour, consistency and composition are verified for. The quality of the product may be severely harmed in processing situations when controls are not adequately applied, such as during dehydration. In order to prevent bacterial contamination of the product during manufacturing, satisfactory hygienic conditions are also upheld. To assess the degree to which the desired quality requirements have been met, the finished product is examined. The can's exterior conditions are carefully examined. A can is considered to be "flat" if both ends are concave, as opposed to cans with flippers, springers, or odours that do not pass inspection [2-4].

When it comes to canned goods, samples of the cans that have passed are opened and the contents are examined. Samples from dried products are inspected to determine the number of flaws. To ensure that the consumer receives the proper cooking instructions from the package, the dried product is frequently tested for its ability to reconstitute. Because IR radiation doesn't interact with minerals or inorganic chemicals in their ionic forms, IRS has limited application for quantifying minerals and ash. However, by altering the IR spectra brought on by interactions with organic acids, organic ions and chelating agents, it is possible to learn more about the mineral composition. IRS can be used to track intricate chemical and physical changes occurring throughout food processing, in addition to the quantitative assessment of individual food elements. These modifications would be reflected in changes in the IR spectrum, which could be used to shed light on the development of a process (thermal treatments, fermentation, curd formation in cheese-making and fruit ripening), or on structural (and functional) modifications of its constituents (changes in the protein, for example).

Any food safety and food quality assurance and control systems must include an evaluation of the fungus that may be present in ingredients and processed foods as a source of contamination or spoiling. It's also crucial to count the live yeasts and filamentous fungi found in meals and drinks that have undergone fermentation. The entire fungal load in a commodity must be counted in specific situations. For instance, precise counts of toxigenic and viable moulds, particularly if combinations of toxins are suspected, are necessary for regulation (e.g., in spices, dried vegetables, human and animal food, frozen and fresh vegetables and meat).

We can now detect and distinguish a wide range of fungus and yeasts in foods thanks to widely used molecular techniques based on DNA. The PCR-based techniques have a high degree of sensitivity and can amplify a little quantity of nucleic acids. Finally, methods for the removal of the interfering material within foods can affect these amplification test systems to add power to the detection of fungi. The governments of these nations are up against formidable obstacles in their efforts to promote sustainable development, mostly as a result of a lack of funding and a talent gap. Higher education institutions (HEIs) in LDCs urgently need updated chemistry curricula and advanced analytical testing facilities to support society's achievement of the SDGs. To promote chemistry education, a coordinated effort by decision-makers, chemical societies, funding organisations, chemists and industry is necessary.

All health and pharmaceutical food products are governed by the National Pharmaceutical Control Bureau (NPCB). The NPCB decides whether the health or medicinal food products should be registered in accordance with the Dangerous Drugs Act of 1952 and the Control of Drugs and Cosmetics Regulation of 1984. An import licence that can be issued by the Compliance Unit may be necessary for imported food items. The exporter or designated distributor must submit a written application to the NPCB indicating the name of the food items, its ingredients and its composition in order to register with the NPCB. Additionally, claims and usage must be made available, along with a copy of the label or other product literature that is attached [5].

## Conclusion

Controlling food safety is a vital economic activity with a $2 billion volume and a 12% growth rate. Food companies, despite the market being segmented and in part young, devote up to 2% of their income to food quality management, according to sector surveys. The need to produce food of greater quality in accordance with more exacting standards is one of several issues facing the global farming sector. Furthermore, a number of unfortunate food safety

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occurrences over the past few years have increased consumer knowledge of food commodities and their manufacturing.

## Acknowledgement

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## Conflict of Interest

There are no conflicts of interest by author.

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