Opinion Article

iMedPub Journals
www.imedpub.com

Biomarkers Journal
ISSN 2472-1646

2021
Vol.7 No.11:111

A Brief Note on Dietary Biomarkers and their Assessment

Benjamin Isabella*

Department of Health Science, University of Gothenburg, Gothenburg, Sweden

***Corresponding author:** Benjamin Isabella, Department of Health Science, University of Gothenburg, Gothenburg, Sweden, E-mail: Isaellabenjamin@odontologi.gu.se

Received date: November 04, 2021; **Accepted date:** November 18, 2021; **Published date:** November 25, 2021

Citation: Isabella B (2021) A Brief Note on Dietary Biomarkers and their Assessment. Biomark J Vol.7 No.11:111.

Description

The most commonly used dietary intake assessment methods (e.g., FFQ) rely mainly on self-reported food recall and contain a range of systematic and random measurement errors. A systematic underreporting of food intake, particularly total calories and absolute levels of macronutrients, has been widely established in weight-loss trials. This problem is worsened by the growing popularity of "ready-to-eat meals" in the Western diet, which have insufficient ingredient lists and participants who are unable to complete the time-consuming and sophisticated dietary questionnaires. Furthermore, when food consumption data is transformed to nutritional intake data, mistakes might occur due to faulty or inadequate food composition databases. Finally, variations in individual metabolism caused by genetics or the gut microbiota complicate intake measurements.

A dietary biomarker enables for the objective measurement of food consumption, its influence on host physiology, or its adjustment of disease risk. Diet-related biomarkers are often categorised into three types, according to a larger paradigm for biomarker utility:

1) Exposure biomarkers

2) Susceptibility markers

3) Outcome biomarkers

An exposure biomarker gives an objective estimate of a certain food or nutrient's dietary consumption. A susceptibility biomarker indicates one's resilience or sensitivity to the impacts of food components, such as iron overload from meat eating. Metabolomics enables the detection of both nutritional and non-nutrient metabolites that might serve as potential biomarkers, allowing for a better understanding of this bidirectional link between diet and physiology. Non-nutrient indicators, on the other hand, are not effectively incorporated into the existing paradigm of biomarker classifications, and no one biomarker ontology can cover all of these categories.

The development of dietary intake biomarkers is best approached as an iterative process incorporating a well-integrated methodologic strategy from biomarker discovery through validation. Biomarker development should also rely on adequately strong study designs in order to find potential biomarkers that can then be verified effectively. While Controlled Feeding Studies (CFSs) are especially useful for biomarker identification and validation, different research designs may be utilised to capture the features of dietary fluctuation and find possible dietary biomarkers for a wide range of foods.

It is frequently important to replicate original biomarker research in multiple groups in order to generalise the results, account for population heterogeneity, and appropriately account for food choice variability and dietary trends. The first validation research should ideally be undertaken in a population similar to the initial discovery cohort, with repeated measurements preferred to decrease intra-person variance in biomarker markers. However, it is critical to acknowledge the limitations of the dietary assessment methodologies and bio-sampling protocols.

Conclusion

New sampling procedures are also being developed in order to enable more efficient, cost-effective sample collecting and greater coverage in larger cohort studies. This is especially essential in investigations with geographically separated cohorts. Dried blood spots, for example, are proven to be a low-cost technique of sample collection and storage; they need little specialised equipment and have various advantages, including straightforward transportation. New gastrointestinal tract sample technologies are evolving, which might lead to the discovery of new nutritional biomarkers related to ingestion and food microbial metabolism. Wearable technological advancements that can constantly monitor metabolites or allow for intermittent sampling will almost certainly complement and speed the biomarker discovery process.