

# Let Thy Food Be Thy Medicine: An Expository on the Curative Power of Food

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## ABSTRACT

One of the peculiarities of world history is the linkage between food consumption and healthcare outcomes and the relationship still exists. The idea that food consumption should contribute to desired health outcomes is rooted in human history. This paper is an expository on the curative power of food. The paper asserts that these curative powers are a result of the constituents of food substances and their reactions and interactions in the body. The paper further suggests that while the future of food as medicine interventions will be shaped by professionals, a high level of collaboration between seemingly disparate fields have to be adopted.

**KEYWORDS:** *food, curative, medicine*

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## INTRODUCTION

Despite the fact that the quote 'let thy food be thy medicine' has been frequently attributed to Hippocrates, historical evidence analysed by Cardenas (2013), van Ommen et al (2018) and Witkamp and van Norren (2018) have shown the absence of the quote in the works of the author. Nevertheless, the quote has served as a basis for the historical views on the complementary nature of nutrition, pharmacology and health. The main thrust of 'let thy food be thy medicine' is that food should not only be consumed for the purpose of satisfying cravings but that it should be also utilised in ensuring that physical health is maintained (Leonti, 2012; Chen et al, 2022). Increased academic attention to the Food is Medicine (FIM) or Food as Medicine (FAM) movements in recent years has been based on the recognition that foods are important for ensuring the health of individuals and communities.

This paper is an expository on the curative power of food. The conceptual basis of the Food as Medicine thought and a short history are presented. The power of food in preventing, managing and even reversing the effects of diseases is also discussed. This paper also explores the emerging theme of the integration of

food as medicine with healthcare especially in the context of global trends such as food as medicine interventions, value chain integrations, education and collaboration. Also, the limitations of the food as medicine approach are discussed. The position of this paper is that the food as medicine movement will play a significant role in the nearest future in shaping sectors as diverse as agricultural development, agro-systems, medicine and healthcare delivery globally and that as such further explorations should be made.

## THE CONCEPTUAL BASIS OF FOOD AS MEDICINE AND ITS HISTORY

The conceptual basis of the linkage between nutrition and health outcomes has been established through trial and errors in various cultures and in different locations in the world. Research carried out by Cardenas (2013), Touwaide and Appetiti (2015) and Witkamp and van Norren (2018) have concluded that nutrition is a central element in diverse forms of traditional medicine. Also, the results of empirical studies have shown that the prevention and management of diseases is to a large extent dependent on making lifestyle changes (McCombie et al, 2017; Lean et al, 2018). These studies have also led to an

increase in the awareness of the merits of food as medicine. By extension, a key dimension of the conceptual basis for the use of food as medicine is the perception that there is a high failure rate in the development of industrial drugs and increases in the occurrences of their detrimental consequences because of the growing complexity of diseases (Hwang et al, 2016; Wong et al, 2018; Lean et al, 2018). Furthermore, the realisation that a significant number of diseases which are prevalent in this era are multi- factorial in nature has increased the incentive for interdisciplinary approaches which encompasses pharmacology, lifestyle-biology and nutrition in the treatment of disease conditions (Wong et al, 2018; Lean et al, 2018).

Another conceptual basis is growing knowledge of the constituents of food substances and the nature of their reactions and interactions in the human body when ingested. Evidences embedded in literature revealed that food can be used as medicine because of a number of substances which they contain and which have been demonstrated to have preventive, curative and therapeutic effects on health (Hwang et al, 2016; Wong et al, 2018; Witkamp & van Norren, 2018). Studies by Ramalingum and Mahomoodally (2014), Abuajah (2017) and Samtiya et al (2021) have shown that food contains functional ingredients or phytochemicals such as non-starchy carbohydrates, plant sterols, phytoestrogens and dietary fibres which improves health. More specifically, dairy products and fish have been demonstrated to contain beneficial microorganisms such as probiotics, prebiotics, bioactive peptides and long-chain polyunsaturated fatty acids which contribute to the healing process while also serving therapeutic functions in the body (Estruch et al, 2013; Teong et al, 2023).

From the above, it is evident that the conceptual basis for the food as medicine approach can be linked to two key dimensions. The first revolves around the need for a more holistic approach to healthcare as a result of the inadequacies of a drug-based approach. The second revolves around the array of the constituents of food substances and their preventive, curative and therapeutic properties.

From the historical perspective, the notion that food should and could be used as medicine stretches back thousands of years. One of the earliest texts on the subject is the Ebers Papyrus which dates from the 2<sup>nd</sup> millennium BC and which prescribed different foods for the treatment of various disease conditions (del Castillo & Llobell, 2021; Metwaly et al, 2021). This millennium also marked the emergence of ayurvedic medicine in India with food as an integral element (Hartsock and Halverson, 2023). Also, between the

3<sup>rd</sup> and 5<sup>th</sup> century BC, the Yellow Emperor's Book of Medicine was published in China and Hippocrates in Greece elucidated the connections between food and health (Hartsock & Halverson, 2023; Bleich, Dupuis & Seligman, 2023). In the modern era, the years between 1747 and 2005 recorded giant strides in the food as medicine movement and encapsulated the introduction of citrus as a cure for scurvy, the emergence of the science of nutrition, the discovery of vitamins and supplements, the establishment of the link between diet and disease and breakthroughs in the study of the interactions between diets, microbiomes and health.

### **THE CURATIVE POWER OF FOODS**

The curative power of food is a sub-theme that has been examined by a wide range of academic studies. The relationship between food and health outcomes have been described as myriad, complex and in a wide range of cases not well understood. Alexis (2022) claimed that the notion of food as medicine is an approach which emphasises the prioritisation of food and diet with the goal of preventing or reversing a disease state or its associated symptoms. As stated above, food can be used as medicine because of its constituent elements and their reactions and interactions when ingested into the human body (Awuchi, 2019; Del Castillo and Llobell, 2021). The curative power of foods and their utilisation in effecting favourable health outcomes has been proven by a wide range of studies. Lucas et al (2014) and Martinez-Gonzalez and Sanchez-Villegas (2016) noted that depression can be managed through tailored dietary plans. Rayman (2015), Tuck and Vanner (2017) and Fitzgerald et al (2017) respectively have proven the impact of food as medicine in the treatment of osteoarthritis, functional bowel diseases and multiple sclerosis.

Heinrich, Kum and Yao (2022) explained that the pace at which the food as medicine concept is being embedded in conventional medicine has been accelerating in recent years despite the fact that the concept challenges conventional constructs. This is due to the demonstrated curative power of food substances. One of the key leverage points of the utilisation of food substances for their curative effects revolves around the idea that the existing one-disease-one target drug use paradigm is becoming increasingly ineffective in recent years. Studies such as those of Abuajah (2017), Yeung, Mocan and Atanasov (2018) and Pujol et al (2023) suggested that the use of food as medicine negates the limitations of conventional drugs in combating multifactorial diseases which are now increasing in prevalence globally.

Downer et al (2020) claimed that the utilisation of food as medicine stems from the proven assertion that food substances play prominent roles in the prevention, treatment, management and even reversal of diseases. Abuajah (2017) have earlier claimed that food substances have functional components such as phytochemicals and bioactives which are essential for preventing degenerative pathologies. Matos, Suzuki and White (2023) and Seligman et al (2023) also expressed that the concept of food extends beyond mere nutrition and now encompasses the medicinal value of food substances especially those that have been demonstrated to have immunomodulatory, anti-diabetic, anti-cancer, anti-inflammatory, anti-microbial and anti-oxidation properties. Evidence in literature suggest that while the unique mechanisms underlying the aforementioned roles by food substances are not always clear, ample empirical evidence suggest that they work (Hare et al, 2021; Seligman et al, 2023; Yao, He & Xiao, 2023).

Examples abound in academic and practitioner literature regarding the use of food as medicine. Alexis (2022) noted the increase in the frequency of dietary prescriptions as the first line of treatment for Polycystic Ovary Syndrome (PCOS). There is also a marked increase in the use of Mediterranean diets in the treatment of discomfort, fatigue and pain among individuals suffering from lipoedema (Di Renzo et al, 2021). Ogunmefun (2018) catalogued the curative effects of foods such as okra, pepper and onions on dysentery, fevers, malaria, throat infections and skin diseases. Kubala (2019) also explained that the Mediterranean diet has been linked to reductions in the risks of heart diseases, obesity, and diabetes and neurodegenerative conditions.

### **INTEGRATING THE FOOD AS MEDICINE APPROACH WITH HEALTHCARE: THE GLOBAL TRENDS**

In the face of global concerns about malnutrition and diet-related chronic diseases, the use of food as medicine is gaining increasing attention and this is evident in academic and practitioner literature. At the most basic levels, while there are global trends in the field of food as medicine which are interesting, it is important to note that food as medicine is mainly about ancient concepts and modern applications (Di Renzo et al, 2021; Owens et al, 2023). Downer et al (2020) noted that food as medicine interventions which include produce prescription programmes and medically tailored groceries and meals are utilised with increasing frequency in the developed countries. The scaled introduction of these interventions is one of the broad themes that will define the fields of nutrition, dietetics and agricultural production and

development in the coming years. It is therefore crucial to examine the trends in this dimension.

A global trend is that the food as medicine approach is increasingly coming under the purview of professionals in the form of personalised nutrition and epigenetics. Food as medicine interventions exist outside the confines of the occasional inclusion of food with curative or preventive properties in meals (Owens et al, 2023; Thomas et al, 2024). These interventions are more intentional and specific in nature and are frequently based on a consideration of the health needs and situation of the target population or individual. For example, medically tailored meals are designed by a professional on the basis of individual assessments and focused nutrition counseling (Seligman et al, 2015; Berkowitz et al, 2019). Medically tailored groceries on the other hand are non-prepared grocery items which are included in treatment plans and prepared at home and tailored towards meeting the needs of patients with both chronic and acute conditions (Seligman et al, 2015; Palar et al, 2017). Produce prescriptions are focused on individuals who can be described as food insecure and revolve around the use of vouchers that can be utilised in procuring food that can also help in treating conditions such as obesity and pre-diabetes.

Another trend in the use of food as medicine is the combination of culinary medicine education and collaboration and community among the various stakeholders in the food security, healthcare, agricultural production and nutrition management chains. Globally, there is an increasing shift towards the recognition of culinary medicine and culinary medicine education as a basis for the design and implementation of food as medicine approaches. Studies such as those of Sicker et al (2020) and Tan et al (2022) maintained that healthcare systems are now considering the incorporation of culinary medicine training in a bid to improve the competency of their professionals. The use of this kind of education is also considered a major linkage towards harnessing the collective knowledge of the healthcare and food sectors in a bid to affect favourable living outcomes (Brennan et al, 2023; Thomas et al, 2024). The fostering of collaboration and communities of learning and practice between healthcare and food systems is now an underlying trend geared towards developing a culture of wellness based on healthy eating and providing much needed support for local and international food systems.

### **LIMITATIONS OF THE FOOD AS MEDICINE APPROACH**

A key limitation on the food as medicine approach is the existence of systemic constraints. Studies such as

Downer et al (2020), Owens et al (2023), Mozaffarian et al (2024) and Thomas et al (2024) noted that the prevalence of limiting factors such as a low level of access to appropriate programmes and services, low level of investment in research and low levels of nutrition knowledge and awareness of interventions on the part of clinicians. While the health benefits of food as medicine are numerous, the combination of the aforementioned factors will impede progress in terms of adoption and utilisation.

Evidence in literature suggests that there are some limitations on the trend towards the utilisation of food as medicine. A key limitation revolves around the socio-cultural differences existing between population groups. Studies such as Leonti (2012) and Adelman and Haushofer (2018) recognised the fact that different cultures and communities exist on different continuum points as to the use of food as medicine. Such cultural and biocultural differences are based on the level of knowledge that has been accumulated over the years in a particular community. Heinrich, Kum and Yao (2022) further claimed that these differences have drastic implications for the acceptance of innovations in terms of the use of food as medicine.

Another limitation on the wide acceptance of 'let thy food be thy medicine' revolves around the misapplications of the approach. Studies such as those of Chen et al (2022) and Houghtaling et al (2024) explained that the use of food as medicine is hampered by misinformation and the dissemination of non-empirical and unverifiable information. This is especially a grave problem considering the widespread dissemination of such information through social media. Another limitation on the food as medicine approach which has been widely reported in literature revolves around knowledge gaps in the design and implementation of the approach. Lastly, the food as medicine approach is limited because of the increasing complexity of drug-nutrient interactions and chronic diseases. Lucan (2018) and Barnidge et al (2020) related that the use of food as medicine must account for the wide range of interactions between nutrients and the constituent elements of different drugs. Furthermore, the existence of autoimmune conditions, exposure to toxins and genetic risks limit the use of the food as medicine approach cannot be used as a stand-alone in effecting favourable health outcomes (Chen et al, 2022; Figueroa & Houghtaling, 2024).

## CONCLUSIONS

The consequences of poor health on the individual, the healthcare system and the society at large are a subject of increasing concerns globally. Food security

and adequate health are two key issues faced globally and at the intersection of these two issues is the idea that food can serve as medicine. This study is an exposition on the use of food as medicine and a number of conclusions can be reached. First, it is imperative to recognise that the effectiveness of food as medicine is to a large extent dependent on achieving attitudinal shifts among a significant percentage of the global population. As studies such as those of Cardenas (2013), McCombie et al (2017) and Del Castillo and Llobel (2021) have shown, the effectiveness of agricultural and healthcare systems in initiating food as medicine measures is hampered by the level of acceptance of these measures among the population.

Another conclusion based on a survey of literature in this field is that food as medicine interventions still need to be driven by experts in order to achieve scale in terms of adoption. The findings of Downer et al (2020), Di Renzo et al (2021) and Owens et al (2023) lean towards the fact that interventions such as produce prescription programmes and medically tailored groceries and meals can enjoy rate of adoption if their consumption is linked to desired health outcomes. It is therefore essential to point out that advances in the field of food as medicine will be accelerated if there is a high level of collaboration between fields as diverse as medicine, agricultural systems, and nutrition and food security.

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