



## Let Food be Thy Medicine and Medicine be Thy Food in the 21<sup>st</sup> Century and Beyond

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### Abstract

Healthy nutrition is one of the most effective and cost-effective ways to prevent and control the burden of many diet-related diseases and their associated risk factors, such as overweight and obesity pandemics, diabetes type 2, high blood pressure and some types of cancers. Recently, Covid 19 pandemic degraded the public health problems of the world and killed a good number of people of all ages and social economic status. Despite the knowledge of an old adage “let food be thy medicine and medicine be thy food,” some people do not believe that a healthy diet can be used to prevent, control or treat some diseases such as Covid 19 that has overwhelmed health and allied professions services to date. However, some studies support the saying that food can be medicinal. This review identifies some empirical studies that proved effective healthy plant-based diets or interventions in the prevention and control of diseases including Covid 19 pandemic, skin diseases, and non-communicable diseases just to name a few examples.

**Keywords:** Food; Health; Medicine; Diseases; Prevention

### Introduction

The assertion shows the significance of healthy food consumption and how the nutrients in many foods contain healing properties. During child development, what a pregnant woman eats influences the inborn. Research [15] affirmed that the mother’s food contents before and during pregnancy determines both the maternal and child health and growth. When an infant develops through its three stages: zygote, embryo, and foetus, its organs and tissues grow, each on its own schedule. Times of intense development are critical periods that depend on nutrients to proceed smoothly. For example, because of its importance in the growth of the neural tube, production of healthy red blood cells, folic acid has been recommended as a supplement during pregnancy and foetal development [17]. The impact of a healthy diet in promoting health or preventing diseases to a person has been noted long ago during the time of Hippocrates around 390BC. ... the original Hippocratic oath, which all medical doctors must recite before graduating states: “I will apply dietetic and lifestyle measures to help the sick to my best ability and judgement; I will protect them from harm and injustice” [16]. It is absolutely fascinating how little of this oath is then followed on treating patients by modern general practitioners.

The explanation of a healthy diet has been constantly shifting to echo the changing understanding of the importance that varied foods, essential nutrients, and other constituent elements play in well-being and disease. Healthy nourishments are higher in plant-based foods, comprised of fresh fruits and vegetables, whole grains, legumes, seeds, and nuts and is lower in animal-based foods, principally fatty and processed meats [4]. This definition concurs with Stark [10] who said a healthy diet is one in which carbohydrates, proteins and fats are eaten in proportion to the energy expended and physiological needs while also offering enough protective foods in the form of vitamins and minerals and hydration.

Unhealthy diets contribute to the disease burdens of the modern societies. For instance, food choices play a major role in high blood pressure cases, overweight and/or obesity, which are in turn risk-factors in heart disease, type 2 diabetes and some types of cancer [9]. The high prevalence of chronic non-communicable diseases has been attributed to the global dietary habits that turned from traditional to that of the developed countries, which are rich in high saturated fats, refined grains, salt, and sugars yet poor in fruits and

vegetables. Yet fruits and vegetables have a diseases protecting factor that has been recognised even during the Covid 19 pandemic. In their study of Healthcare workers from six countries which are France, Germany, Italy, Spain, United Kingdom, United States of America, Kim, H., *et al.* [8] found that after control of confounders variables, vegetarian respondents or pescatarians had 73% (OR 0.27, 95% CI 0.10 to 0.81) and 59% (OR 0.41, 95% CI 0.17 to 0.99) lower odds between moderate to severe COVID-19 respectively, in comparison with respondents who did not follow the said diets. Comparing vegetarians with those who followed low carbohydrate, high protein diets, the later had greater odds of moderate-to- severe COVID-19 (OR 3.86, 95% CI 1.13 to 13.24).

Healthcare employees who treat patients with COVID-19 illness in medical clinics, emergency rooms, and hospitals are mostly predisposed to contracting the infection given their high rates of exposure to the patients [12]. Furthermore, it has been established that healthy diets play a vital role in both innate and acquired protection against diseases [3].

Unprocessed or minimally processed traditional foods normally contain sufficient nutrients and energy density especially when they are from plant kingdom or with minimal amounts of animal foods, and little salt. Even when the processed ingredients from minimal changed group are converted to new foods, their overall quality would still be higher than the processed. Therefore, the best diet should consist of unprocessed or minimally processed foods, which prevents diseases and maintain health in addition to a healthy lifestyle.

Lifestyle consists of choices made by individuals in areas over which they have some degree of control. These include decisions about how, when, and what an individual eats or drinks; his/her exercise and rest habits; and a myriad of other choices that affect one's risk of disease or health [7]. Concerning the role of the physician in impacting patients' diets, it was established [1] found that the physician investment in patients' dietary habits is a key influence in behaviour change but has been described as suboptimal, due in part to limited time with the patient, low reimbursement, minimal education, and lack of comfort in counselling about healthful dietary patterns.

While medical practitioners are supposed to suggest best regimes and lifestyle to speed up recovery and prevent diseases, empirical information shows that medical students are not equipped to provide excellent, effective nutrition care. Medical education can

be improved by learning institutions' assurance to make nutrition education core course in medical curricula to train learners in knowledge and skills that make competent future doctors for the 21<sup>st</sup> century [5]. In addition, it was established that there are various deficits in nutrition competencies among medical students [6]. Further [3] observed that doctors have been advising non-empirical nutrition information and concluded that medical students need an evidence-based nutrition and dietetics training. In conclusion, recommendations were that medical trainees obtain skills to critically evaluate nutrition information as they do in medicine concepts.

### Examples of medicinal plants used in the control and treatment of Covid 19 pandemic

For centuries, people have been using medicinal plants throughout the world. It is estimated that around 80% of the world's population depend on herbal medicines to attend to some of their primary healthcare cases, according to the World Health Organization [2].

In countries such as China, the United States of America, and South Asia, the search for therapeutic plants has amplified because of the Covid 19 pandemic [12]. In sub-Saharan Africa, 99 plant types have treated symptoms of Covid 19, which include fatigue, fever, and coughs. The scientific names of the plants used include: *zingiber officinale* roscoe, *lippia javanica* (Burm.f.) *spreng.*, *ocimum gratissimum* L., *citrus limon* (L.) osbeck, and *artemisia afra* Jacq. ex willd and are commonly in several countries of the region [13], while garlic, lemon, cloves and eucalyptus were the ones frequently used in Morocco.

### Phytochemicals in the prevention of non-communicable diseases

Phytochemical are non-nutrients compounds found in plants. These may impart flavours and colours, but also have profound physiological effects, including suppression of the development of cancer [17]. Whitney and Rolfes proposed: do not try to single out one particular food for its magic phytochemical. Instead, eat a wide variety of fruits and vegetables in generous quantities every day, and get all the magic compounds these foods have to offer [17]. It was mentioned that people who eat generous amounts of fruits and vegetables daily are helping their bodies to fight diseases [17]. Phytochemicals are plant chemicals, which are not nutrients but do affect health by working against cancer cells and other diseases [8,17].

In the near past, research has established that phytochemicals belong to secondary metabolites of plants and include a number of chemicals such as polyphenols, flavonoids, steroidal saponins, organosulphur compounds, and vitamins. Many have been useful in pharmaceutical applications, cosmetics, nutrition and dietary supplements [18,19].

Further research findings established that intake of vegetables and fruits is inversely connected with the risk of many non-communicable diseases, and antioxidant phytochemicals in vegetables and fruits are considered to be responsible for these health benefits. They often possess strong antioxidant and free radical scavenging abilities, as well as anti-inflammatory action, which are also the basis of other bioactivities and health benefits, such as anticancer, anti-aging, and protective action for cardiovascular diseases, diabetes mellitus, obesity and neurodegenerative diseases. They can be found in many medicinal plants, and play a significant role in the prevention and treatment of control of chronic diseases caused by oxidative stress [22]. The same authors reported that antioxidant phytochemicals can be good candidates for the prevention and treatment of obesity through direct inhibition of adipogenesis as well as anti-inflammation and anti-oxidative action.

#### Phytochemicals in skin diseases

As reported by the European Medicines agency [20], numerous studies investigated in depth the real efficacy of herbal medicinal products and resulting molecules. Herbal products can be categorised according to their clinical use in several diseases such as appetite disorders, sleep disorders, pain and inflammation control, eye disorders, gastrointestinal disorders, and others. This was alluded to in the past years [21] that phytochemical supplementation was found to benefit human health through supplying specific anti-oxidative and or bioactive compounds which have preventive role in several diseases. Flavonoids are the most common phytochemicals that provide antimicrobial, antioxidant, anticancer, anti-inflammatory, and wound-healing activities.

#### Medicinal plants in enhancement of sexual performance and virility

The use of plant or plant-based products to kindle sexual desire and to increase performance and satisfaction is nearly as old as the human race [23]. For example, *Tribulus terrestris* has long been taken as a tonic and aphrodisiac in some countries such as India, Pakistan and traditional Chinese medicine as a treatment for impotence and as a stimulant to enhance sexual drive and performance [24]. The plant's roots and fruits are useful in rheumatism, piles, renal and vesical calculi, menorrhagia, impotency, premature ejaculation, general weakness etc. It is clear that medicinal plants can be used among diseases that afflict humanity currently and in

the future as some active phytochemical constituents have been found to be natural anti-obesity agents [25].

#### Conclusion

The importance of food in the prevention and control of both chronic and acute diseases has been recognised for many centuries. For example in the year 1992, the American Dietetic Association acknowledged that the contribution of nutrition to preventing diseases, prolonging life, and promoting health is well recognised. However, there has been observed a knowledge deficit among those who provide medical services. Even the medical doctors' fraternity who prescribe medication to patients are cited in the deficit. If such knowledge deficit is mentioned in the developed world, then it is more alarming in the middle and low income countries where the ratio of medical and allied personal is little compared to the number of clients seeking their services. An urgent call has been made to update the curricula of medical students and include adequate nutrition knowledge and skills to equip them with evidence-based information. Of great importance is the key role observed on plants-based diets to enhance both innate and adaptive immunity, which has proved significant even in the control of Covid -19 pandemic. In addition, medicinal plants have been found to treat, control and prevent conditions like obesity pandemics, diabetes, high blood pressure and some types of cancers, which are public health problems of the 21<sup>st</sup> century and beyond. Individuals should strive to learn how to prepare and appropriately use medicinal plants to alleviate a number of health threatening conditions as evidence show that plants are efficacious in such. Medicinal plants' practice can contribute significantly to health equity and alleviate health-care inequalities challenges especially in low and middle income countries.

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