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An Urgent Need for Validated Nutraceutical Sciences

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Opinion

Prolonged malfunctions of particular cellular molecules would sometimes lead to irreversible abnormalities and dysfunctions of cells, tissues and individuals, which are undoubtedly responsible for the consequential crisis of various symptoms and syndromes as particular diseases and disorders. Pharmaceutical sciences have been dedicated to the discovery and subsequent development of innovative drugs useful for the therapy and treatment of patients suffering from a variety of these symptoms. Validated evidence is absolutely required for the demonstration of beneficial effects of the acute administration of medicines and drugs on different syndromes and symptoms seen in patients, while they have no choice but to take drugs for mitigation of their unpleasant disabilities and conditions as quickly as possible even at the cost of inevitable untoward side effects sometimes highly toxic outside the target cells. This is the reason why drugs are often called as a “double edged sword”.

In contrast to drugs with inevitable side effects, edible foods have been often beneficial for the prophylaxis and/or alleviation of unpleasant conditions upon sustained daily intake from childhood in young to elderly people with particular health disturbances. Foods are in principle derived from edible materials with guaranteed safety for people's health for hundreds of years in human history unless quite excessive amounts are unbelievably consumed. Although drugs are highly effective in inducing acute mitigation of unpleasant symptoms during the onset of diseases after a single oral administration for the therapy, chronic consumption is undoubtedly necessary for the appearance of alleviation of unpleasant functional disturbances with beneficial foods available for the prophylaxis. For patients suffering from severe symptoms of a particular disease, however, prophylaxis is sometimes much more important than therapy. People do not have to suffer from heavily unpleasant conditions as long as they pay much attention to their life styles including daily food intake. A tremendous number of edible foods and their ingredients have been used for the development of dietary supplements and nutraceuticals for many reasons in recent years, while their scientific background is considerably poor compared with drugs so far.

For example, edible active ingredients should be stable in the acidic gastric juice after oral intake, followed by cleavage with digestive enzymes for effective absorption from intestinal mucosal cells into the portal vein and subsequent hepatic metabolism before the appearance in circulating bloods for the delivery to target organs, tissues and cells. They should be also excreted from the kidney after metabolism. However, this simple physiological mechanism is regrettably unclarified with numerous food-derived products on sale as a dietary supplement and/or nutraceutical in the market. The poor scientific validation has been highly impairing the importance of prophylaxis of the onset of unpleasant disabilities and possible alleviation of particular symptoms in people taking food-relevant products for health improvement.

It thus appears that nutraceutical sciences should be rapidly established in collaboration with pharmaceutical sciences for the purpose of maintenance of the health and welfare in human beings. From this point of view, laboratory experiments are to be more critically and precisely done at least using molecular and cellular biological techniques with dietary supplements and nutraceuticals to provide qualified evidence for the clinical effectiveness and usefulness toward the prophylaxis and possible alleviation of a variety of unpleasant conditions in people without particular diseases diagnosed. Both intervention and cohort studies are of course necessary for the establishment of nutraceutical sciences as seen with pharmaceutical sciences in the nearest future.

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