

Food Quality and Safety, the Collective Responsibility of All

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The nutrients in our foods are dwindling! This is indeed an alarming distress call, isn't it? Well, by today's standards, the principles in food science and technologies have provided ways to deploy strategies to preserve foods and also store them over a long period of time in a reasonably perfect state. For such high levels of scientific advancements, our foods should have been safe for consumption. However, in several places, in rich and poor homes, in advanced nations and developing countries, there seems to be a regular call to food security and safety. Sadly, this call should have been a clear case of anachronism by today's standards, judging from the great strides we have made into the scientific world, but the situation remains precarious.

Let us take a step back and consider the ancient times when man was living in caves and fire had not been discovered. Did these cave men too call for food security and safety of their diets? Maybe, yes, because they must have surely experienced some forms of microbial food infections and toxicities. Did they experience processing toxicities in any form? Maybe yes, because fermentation of some of their food resources might have occurred. Fast forward to the industrial revolution. Here, fire had long been discovered and thermal processing of many foods had long been in use. Various forms of food processing such as roasting, retorting, frying, grilling and smoking had been empowered. We ask ourselves again. Were their diets during these times secured and safe? In these two scenarios; the cave man's diets and the industrial revolution's diets were all unsecure and unsafe, at least as we perceive them to be today. Thus, in contemporary times, if we still make the same call to make our foods secure and safe, one wonders whether we are truly scientifically advanced. Indeed, from our current knowledge, when such calls are made they are justified. One wonders why this must be so. At least the answer may lie in the fact that, the modern man has tools far advanced to carry out research into our food resources and their safety. However, some underlying factors such

as poverty, greed and climate change hinder our progress towards food security and safety. For instance, in order to solve the problem of storage and preservation of farm produce, the agro chemical industries have produced pesticides, with the hope that these biocides would help preserve our foods. Careful observation however, reveals that though the methods of application of these agro chemicals have been clearly labelled, in most cases their applications are often flouted by farmers, either out of poverty, illiteracy, or sheer greed. Can one imagine a case where farmers are supposed to wait for at least two weeks before harvest but because of greed they apply chemicals today and harvest tomorrow? How about another case where middlemen connive with farmers to mix several agrochemicals together and spray farm produce thinking that when the produce are glossy the market value would be premium. If this is not a clear case of greediness, then what is it? The regulatory industries often cite several reasons why they are not able to monitor these practices and the root cause of their complaints most often points to logistics, personnel and other resources. We can take for granted that, many of the officers in these regulatory institutions are well trained, but how do we account for the 'mushrooming' of food joints in our communities without authorization and of course without monitoring. While these problems are often held in check in developed countries, it is rather pervasive in developing countries. How do you, for example, convince a poor and hungry family to dispose of sacks of cereals contaminated with mycotoxins? In some other cases too, scientific solutions to problems are not in tandem with the demands of consumers. For instance, how do you ask a food service operator to stop packaging food in plastic containers when there are no alternatives? Part of our problems are also due to the novel demands of consumers who are becoming sophisticated. For example, some consumers follow fad diets in order to keep their body shapes or figures and this places high demand on researchers to provide solutions for these users.

It is no wonder that there are several novel food-processing technologies that seem to be unsafe. There are also several food-processing toxicants that accumulate in foods merely because of the treatment processes. We can cite the presence of acrylamide, polyaromatic hydrocarbon (PAH), isopeptides, heterocyclic amine imidazoquinoline and nitrosamines in foods. These are very dangerous chemicals produced while components of the food simply undergo by-reactions during thermal processing. How about bleaching our wheat grains using chlorinated products? During bleaching what happens to the micronutrients and the amino acids that are the basis of nutrition and dietetics? What about plastics in foods? Isn't it bad enough to know that in some places foods are cooked indiscriminately in plastics at very high temperatures for a very long time? And how are these plastics interacting with micronutrients, amino acids and essential fatty acids, for example? I would not be surprised if sooner or later there are reports that plastics in foods interact with micronutrients to give some dangerous toxicants. The cave man obviously consumed foods without these processing toxicants especially since they did not have the advanced technologies we have now. However, they were confronted with natural toxins present in their diets. For instance, how were they able to cope with the numerous toxins such as lectins, canavaine, L- DOPA and such other chemicals in their environment? Surely, they might have had basic processing technologies to make their foods secure and safe, but they were no better than us in terms of contamination resulting from the environment. Our case may even be worse because of the advanced technologies we have. For instance, it is on record that nutrient contents of many foods have been dwindling since ancient times, arguably because of climate change resulting from excessive exploitation by man.

One wonders whether in the midst of all these eco-environmental insecurities of our food sources, the true impact of the residual nutrients that remain in our foods could be bioavailable to sustain humanity. Many things must change in order to secure our food resources and the safety of our diets. Poverty must be addressed as the key root cause of the problems we face. Food scientists, nutritionists and dietitians must be at the forefront of government policy to produce food for the masses. Quite often, policy makers think that when the belly is full then there is no hunger thus, they spend all their energies in food production. However, we know that there is hidden hunger resulting from lack of micronutrients which the mass production of food does not take into account. How do we ensure toxicological safety of our excess stored foods without the active participation of food toxicologists, who must ensure their chemical and microbial safety if these stored foods are rather left in the hands of untrained personnel? Why do we leave the food ser-

vice sector in the hands of food business people who are only interested in huge profit margins while the process of food preparation, that must be closely monitored to ensure safety, takes backstage? We pretend to control environmental damage or we seem powerless to enforce control and this has emboldened people to continue to use banned and questionable agrochemicals such as glyphosate, dioxin and other such dangerous chemicals indiscriminately, either out of sheer greed or illiteracy. Yet, we assume that our fruits and vegetables, that must provide us with micronutrients, would deliver same in these cataclysmic ecologies. How can we assume that everything would be safe when we do not control and monitor illegal mining of precious minerals in food ecologies? Unfortunately, these activities have been documented as leaving heavy metal pollution and in some cases, radionuclide contaminants in their trails. In these circumstances, how can we assume that our food commodities would be safe? It is no surprise that many of our food commodities have several radionuclide contaminants, often over and above the recommended thresholds.

Many of my colleagues believe that it is possible to control our food resources on the field and also at central pack houses, where our produce would come under critical scrutiny to ensure quality and safety. At these collection points, these farm produce would be decontaminated from pesticides, heavy metals, microbes and mycotoxins. The produce would be then be stored under modified atmosphere storage conditions for sustenance. We believe that when our food resources are secured we would probably visit hospitals for some other conditions other than issues bordering on food-borne infections and toxicants. It is then that the nutrients in our diets would truly impact on the health of humanity. These solutions are not a tall order. Let our visions lead the way!

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