

## Editorial

# Using Plastic Containers for Hot Meals May Induce Potential Risk of Allergic Asthma

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Today, in the industrialized societies, many people use plastic containers for more convenience and saving time, unaware of its negative consequences for their health. It is known that accumulation of constituents of plastic materials in the body causes a number of complications and is a serious threat to body health. One of the diseases threatening communities is asthma while major causes of this problem are chemicals and allergens in the environment. Environmental triggers not only cause exacerbations of asthma in people, but also affect the intra-uterine life of humans, therefore endanger the health of future generations (Wang et al., 2015). In a recent study, it was found that when the fetuses are exposed to a chemical compound called phthalate, the risk of asthma increases in childhood. These hazardous chemical materials can increase the risk of asthma in the age group of 4-11 years up to 80%. Phthalates that are used in the production of flexible plastic could be transmitted from mother to fetus (Robinson and Miller, 2015). One of the main routes of plastic compounds transmission into the body through the oral route is storage containers. These containers can react with heat causing food pollution and consumer poisoning. Plastic is produced from four main compounds which are 1) polyethylene terephthalate that is mostly used in packaging of drinks and mineral water that is toxic and has damaging effects on the body; 2) polypropylene that is used in packaging of a variety of snacks; 3) high-density polyethylene; 4) polystyrene which is used in foam and non-foam in the manufacture of disposable one-time usage containers such as cups, plates, utensils, etc. These substances are carcinogenic aromatic compounds and according to warnings from experts, in long-term use, have harmful effects on human

health (Robinson and Miller, 2015; Wang et al., 2015). In addition, there are other compounds used in plastic material that may have toxic effects on the body. Bisphenol, an unbreakable, light, as well as transparent material, is used to make polycarbonate plastic (such as athletes' water bottle in the coating of food cans, beverage cans, and also dental filling materials). With washing and frequent use of plastics, Bisphenol A leaks into fluid that can induce asthma and allergies in children. Moreover, it has a likely effect on the cell DNA and creates genetic mutation. Perhaps the increasing prevalence of asthma in the past 30 years could be attributed to certain factors in the environment such as Bisphenol A. The fat droplets on the surface of hot liquids in the plastic disposable cups is in fact polystyrene which is a poison derived from the plastic. Dioxin is another highly toxic chemical substance for human cells that is particularly produced from plastic dishes by the heat of high-fat foods. Phthalates in plastic materials cause hormonal abnormalities, birth defects, reproductive problems, as well as high concentrations of phthalates metabolites in the urine exacerbates the asthma symptoms (Kim et al., 2012; Robinson and Miller, 2015; Wang et al., 2015). Therefore, extreme attention should be made to storage containers and food packaging whereas adopting proper health policies in the field of nutrition and related materials is a necessity. To reduce the harmful use of plastic materials (often in disposable forms presented in the market), plant based disposable containers made according to defined standards can be used. In addition, disposable materials should have a smooth surface, with no color, scratch or hole in order to preventing microbial contamination. Recycled materials should not be applied in the preparation of the food

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containers in order to prevent biological and chemical contamination. Hot foods (temperature above 65 °C) must not be stored in plastic containers. High temperature can release monomers of plastic materials into the food which have negative impact on human health. Nanotechnology can help to decrease the permeability in covering surfaces, improve the wall qualities (mechanical, thermal, chemical, and biological), and increases heat resistance plus showing more anti-microbial and anti-fungal effects. Nano-sensors that are sensitive to chemicals released from putrefied foods can be used in smart packaging, as when the food is spoiled, packaging color changes and alerts the consumer. Silicone plastic does not react with foods and so does not usually release harmful materials (Kim et al., 2012; Pawar et al., 2011). Finally, policy makers in country's health system must change people's consumption patterns. Elimination of plastic based containers and production of plant based containers are

important steps towards solving the problem of hazardous factors in the field of food and nutrition.

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