

Krotova A.A.

COOKWARE MATERIALS AND THEIR EFFECT ON HEALTH

Tutor: senior lecturer Abedkouskaya I.Y.

Department of Foreign Languages

Belarusian State Medical University, Minsk

Relevance. A variety of materials and their properties provides a huge range of cookware (frying pans, sauce pans, casseroles, knives, etc) that can be made of aluminum, stainless steel, glass, cast iron, enamel, plastic materials and can have different nonstick surfaces: polytetrafluoroethylene, ceramic and silicone. Cooking utensils contact with different substances daily such as acids, organic compounds, detergents and high temperature but not all of them are chemically inert and stable. However most people are unaware of the possible negative effect of these materials, thus their properties and influence on human health need special consideration.

Aim: to study the properties of different cookware materials; to draw public attention to the influence of cookware materials on people's health and food quality.

Materials and methods: An overview of scientific literature including books, articles devoted to properties of cookware materials was made. A survey of 72 respondents from Belarusian State Medical University was conducted to analyze their attitude to the use of different cookware materials.

Results and their discussio. The results of the research have shown that 79.2% of respondents use cooking utensils with nonstick surfaces (among them 77.9% with polytetrafluoroethylene, 30.9% with ceramic, 5.9% with silicone covering); 50% use cookware made of stainless steel; 25% use cast iron; 18.1% aluminum; 23.6% enamel.

Cast iron is completely safe for health and does not affect food properties. Enamel is safe if the surface is not damaged, because the metal of the base can react with acids from food and produce nickel and chromium ions, which cause severe dermatitis. Stainless steel contains nickel which can cause dermatitis. It is not recommended to prepare spicy food in it or to use damaged stainless steel cookware. Aluminum reacts with food both during the cooking process and storage (5.6% of respondents use aluminum cookware for storage). Toxicity of aluminum is linked to its antagonism to calcium and magnesium, phosphorus, zinc and copper and its influence on parathyroid glands, accumulation in kidneys, bone and nerve tissue. Nonstick polytetrafluoroethylene surface is not dangerous to people's health. According to American Cancer Society there are no proven risks to humans from using these products other than a possible risk of flu-like symptoms from breathing in fumes from heated (>399°C) cookware with nonstick coatings. Silicone cookware is not as stable and inert as it used to be considered. Studies conducted in 2019, 2021 and 2022 found that siloxanes from these utensils migrate into food and evaporate into indoor air at the temperatures above 90°C. Ceramic coatings have unique properties such as resistance to high heat, abrasion/wear, and chemical effect. Plastic utensils are used for storage by 59.7% of respondents and 6.3% of them said, that plastic material affected the taste of food, while glassware, which is used by 66,7% of students surveyed, was not criticized by any of the respondents as it does not react with the food stuffs.

Conclusion: people's health can be negatively affected by aluminum and damaged stainless steel cookware. So the main requirement for cookware materials is chemical inertness and safety in use. Plastic affects the taste of food and decreases its safety and nutrition value. Enamel and nonstick materials are safe if used properly. Therefore, the best materials by safety criteria are glass and cast iron cookware.