

UNIVERZITET U SARAJEVU

VETERINARSKI FAKULTET

Završni rad specijalističkog studija "Veterinarska medicina i javno zdravstvo"

Smjer "Sigurnost hrane"

MIKROPLASTIKA U HRANI I VODI ZA PIĆE

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UNIVERSITY IN SARAJEVO

VETERINARY FACULTY

Final Thesis of the Academic Specialist Study “Veterinary Medicine and Public
Health”

Field of Study: “Food Safety”

MICROPLASTICS IN FOOD AND DRINKING WATER

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SAŽETAK

Plastični materijali zbog svojih povoljnih svojstava imaju široku primjenu u gotovo svim segmentima savremenog života. Međutim, njihova intenzivna proizvodnja i neadekvatno upravljanje otpadom doveli su do nastanka mikroplastike, koja predstavlja jedan od najznačajnijih zagađivača okoliša. Zbog svoje postojanosti i sposobnosti da se prenosi između različitih komponenti okoliša, mikroplastika je danas prisutna u vodi, tlu, zraku i prehrambenom lancu, čime postaje značajan izazov za sigurnost hrane i zaštitu javnog zdravlja.

Cilj ovog rada bio je sistematski prikazati porijeklo, izvore i puteve širenja mikroplastike u okolišu, s posebnim osvrtom na njenu prisutnost u hrani i vodi za piće te potencijalne posljedice po zdravlje ljudi. Rad obuhvata pregled naučnih saznanja o najznačajnijim izvorima mikroplastike u svakodnevnom životu, uključujući kozmetičke proizvode, tekstil, poljoprivredu, boje i ambalažne materijale. Posebno su analizirani putevi kontaminacije prehrambenih proizvoda, uključujući ribu, školjkaše, so i vodu za piće, kao i procesi bioakumulacije i biomagnifikacije mikroplastike u hranidbenom lancu. Također su prikazane mogućnosti smanjenja emisije mikroplastike kroz zakonodavne mjere, unapređenje sistema upravljanja otpadom, razvoj alternativnih materijala i primjenu novih tehnologija.

Analiza dostupne literature potvrđuje da je mikroplastika postala globalni problem koji zahtijeva multidisciplinarni pristup. Iako je njena prisutnost u okolišu i prehrambenom lancu nesporno dokazana, još uvijek postoje značajne nepoznanice u pogledu dugoročnih učinaka na zdravlje ljudi. Daljnja istraživanja usmjerena na procjenu izloženosti, standardizaciju analitičkih metoda i procjenu rizika od ključnog su značaja za unapređenje sigurnosti hrane i očuvanje zdravlja ljudi i okoliša.

ABSTRACT

Due to their favorable properties, plastic materials are widely used in almost every aspect of modern life. However, their extensive production and inadequate waste management have led to the generation of microplastics, which have become one of the most significant environmental pollutants. Owing to their persistence and ability to disperse across different environmental compartments, microplastics are now detected in water, soil, air, and the food chain, representing an emerging challenge to food safety and public health.

The aim of this paper was to provide a comprehensive overview of the origin, sources, and pathways of microplastics in the environment, with particular emphasis on their occurrence in food and drinking water and their potential impact on human health. The paper reviews current scientific evidence on the major sources of microplastics in everyday life, including cosmetics, textiles, agriculture, paints, and food packaging materials. Particular attention is given to the contamination pathways of food products, including fish, shellfish, salt, and drinking water, as well as to the processes of bioaccumulation and biomagnification of microplastics within the food chain. Furthermore, current approaches to reducing microplastic emissions are discussed, including legislative measures, improvements in waste management, the development of alternative materials, and the application of innovative technologies.

The available scientific evidence confirms that microplastics have become a global environmental issue requiring a multidisciplinary approach. Although their presence in the environment and the food chain has been unequivocally demonstrated, significant knowledge gaps remain regarding their long-term effects on human health. Further research focusing on exposure assessment, standardization of analytical methods, and risk assessment is essential for improving food safety and protecting both human health and the environment.