The assessment of health-related biomarkers among different dietary patterns

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Vegetarian and vegan diets are increasingly popular for their apparent health and environmental benefits, yet their biological effects are complex and influenced by nutrition, metabolism, and environmental exposures. A recent review of biomarkers related to oxidative stress, inflammation, and genomic stability underscores the variability in findings regarding the effects of different dietary patterns.

Previously, we showed that vegetarians had lower levels of nutrients primarily obtained from animal foods, including calcium, zinc, copper, and vitamins B_{12} and D. These deficiencies coincided with reduced antioxidant defences, higher homocysteine, and increased markers of genomic instability, such as DNA strand breaks, micronuclei formation, and shorter telomeres. In contrast, omnivorous diets increased exposure to toxic metals, notably mercury and arsenic, reflecting consumption of fish and other animal products. Nevertheless, in a pilot study, we managed to show that female pescatarians had a lower baseline DNA damage profile, indicating that dietary choices can influence early biomarkers of DNA damage, thus emphasising the role of diet in long-term disease risk.

Since dietary patterns significantly shape nutritional status, exposure to food-borne contaminants, and molecular markers of health, we recently launched a new project, UZDRAVLJe (/'uzdravʎe/, Croatian expression for "cheers"), that integrates nutrition, toxicology, and molecular epidemiology through a multi-biomarker approach. Future research will focus on biochemical parameters, DNA damage, microbiome, and also the diet quality in order to clarify the long-term health implications of vegetarian, vegan, and omnivorous diets.

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