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The impact of the omega-6/omega-3 fatty acid ratio and green vegetables on inflammatory biomarkers in the spontaneously hypertensive rat

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The relationship between diet and disease has long been established, with certain dietary patterns either enhancing or reducing inflammatory processes that mediate disease risk. Diets with lower omega-6/omega-3 fatty acid ratios as well as those rich in green, leafy vegetables (GLVs) are often associated with decreased risk. Indicators of inflammatory status such as adiponectin and highly sensitive C-reactive protein (hsCRP) are responsive to dietary modifications, with higher levels of adiponectin and lower levels of hsCRP indicating less inflammation. Two independent studies were conducted to determine the influence of GLVs (collard greens, purslane, sweet potato greens), incorporated into diets with a 25:1 or 1:3 omega-6/omega-3 fatty acid ratio on plasma adiponectin and hsCRP levels of the spontaneously hypertensive rat. Following 6-weeks consumption of the GLV diets with a 25:1 omega-6/omega-3 fatty acid ratio, plasma adiponectin levels were reduced; hsCRP levels were increased among rats consuming diets containing collard greens and purslane but not sweet potato greens. A desirable increase in plasma adiponectin and decrease in hsCRP were observed following the consumption of GLVs incorporated into diets containing a 1:3 omega-6/omega-3 fatty acid ratio. The findings of these studies suggest the ability of GLVs to influence levels of inflammatory biomarkers, with these vegetables favourably attenuating inflammation in the presence of a 1:3 omega-6/omega-3 fatty acid ratio. Based on their ability to serve as mediators in reducing inflammatory responses, it is expected that these GLVs have implications in reducing risk for both cardiovascular and endocrine diseases.

Biography

Melissa Johnson received her PhD in Integrative Biosciences from Tuskegee University and currently serves as Assistant Professor in the Department of Food and Nutritional Sciences at Tuskegee University. She has published several papers in peer-reviewed journals, as well as served as co-author of chapters in edited books. Her research interests include cardiovascular and other chronic diseases, health promotion, disease prevention, and health disparities.

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