Proceedings of the Nutrition Society (2024), **83 (OCE4)**, E494 doi:10.1017/S0029665124007328

Nutrition Society Congress 2024, 2–5 July 2024

Salivary redox biomarkers of overweight and obese adults in response to prebiotics intervention

Xiangyu Meng[1], Lijing Ke[1,2] and Li Li[3]
[1]*Food Nutrition Sciences Centre, Zhejiang Gongshang University, Hangzhou, Zhejiang 310018, China*
[2]*School of Food Science and Nutrition, University of Leeds, Leeds, LS2 9JT, UK*
[3]*Clinical Medicine College, Hangzhou Normal University, Hangzhou, China*

Overweight and obesity are fast-growing risk to health. Its occurrence and prevalence are positively correlated to oxidative stress and inflammation. Saliva, as a crucial biological fluid, contains numerous redox biomarkers related to overweight and obesity(1) and is consistent with the corresponding biomarkers in blood(2). The prebiotics have been found to regulate the energy metabolism and reduce the severity of obesity. Their influences on salivary redox homeostasis, however, remain unclear. This study set out to investigate the changes in salivary redox biomarkers of overweight/obese Chinese adults in response to prebiotic intervention.

In total 102 overweight and obese adults (BMI $\geq$ 26.5, male: female = 48:54) were recruited and randomly assigned to intervention group and placebo control. The intervention group received a prebiotics cocktail (10 g per serving, containing 3.6 g of inulin, 3.6 g of resistant dextrin, 0.8 g of oat fiber, 0.8 g of psyllium husk), while the control group received a placebo, 3 times per day for three months. Their saliva samples before and after intervention were collected by natural flow method and quantified for the salivary flow rate, total protein content, and salivary redox biomarkers, namely ferric-reducing antioxidant power (FRAP), thiol, uric acid, malondialdehyde, glutathione (GSH) levels, and superoxide dismutase (SOD) enzyme activity. There are 32 participants has completed the intervention while the other 70 participants are still ongoing.

The data collected to date showed an average weight reduction of 5.37 kg in the intervention group and 0.72 kg in the placebo control, with a significantly different BMI ($p < 0.05$). The intervention group showed significant decreases in salivary uric acid and malondialdehyde ($p < 0.05$), and significant increases in FRAP, GSH levels, and SOD enzyme activity ($p < 0.05$), while no significant differences were found among other biomarkers. It is worth noting that the salivary flow rate increased slightly while gaining the weight loss, although not significantly. Upon completion of the study, the salivary attributes will be correlated with gut microbiome profile to interpret the link between redox homeostasis in body fluids and prebiotics-caused gut microbial alternation.

This study provides new insights in the redox biomarkers of overweight or obese adults, particularly in response to the prebiotic intervention and the subsequent weight loss. It may facilitate the establishment of noninvasive methods for determination of the redox biomarkers of obese patients and evaluation of dietary intervention.

Acknowledgments
This work was supported by The "Pioneer" and "Leading Goose" R&D Program of Zhejiang (No. 2022C03138). The authors would like to thank the volunteers who participated in the study.

References
1. Zalewska A, Kossakowska A, Taranta-Janusz K *et al.* (2020) *J Clin Med* **9**(2), 548.
2. Chielle E O & Casarin J N (2017) *Arch Endocrinol Metab* **61** (2), 152–159.