

A comparison of nutritional adequacy, body composition, blood pressure and salivary C-reactive protein between a sample of young adults following vegan and omnivorous diets

G.C. Kandir¹ and P.S. Thondre¹

¹Faculty of Health and Life Sciences, Oxford Brookes University, Oxford, UK

Vegan diets avoid the consumption of animal-based foods, including meat, fish, poultry, dairy, eggs, honey and insects⁽¹⁾. This removal of entire food groups from the diet may lead to inadequate intake of some macro and micronutrients. Evidence from studies demonstrates that plant-based diets may lead to an improved lipid profile, lower body weight, lower blood pressure and reduced incidence of type 2 diabetes⁽²⁾. Chronic diseases are characterised by elevated levels of C-reactive Protein (CRP), an acute-phase protein⁽³⁾. As plant-based diets become more popular, it is useful to compare the levels of this inflammatory marker in individuals between those who consume strict vegan diets and those following an omnivorous diet. The aim of this study was to compare the nutritional adequacy of a vegan diet with an omnivorous diet and to determine their effect on the inflammatory marker salivary CRP, blood pressure and anthropometric measurements.

A cross-sectional study was conducted with fifteen adults who consumed a vegan diet (age: 32 ± 11 years, BMI: 23 ± 3.5 kg/m²) and fifteen omnivores (age: 34 ± 15 years, BMI: 24 ± 3.4 kg/m²). Anthropometric measurements (body weight, height, BMI and body composition) and blood pressure were assessed. Saliva samples were collected to determine CRP using Enzyme linked immunosorbent assay (ELISA). A validated Food Frequency Questionnaire (FFQ) was used to assess habitual food intake. Comparison of data was done using an independent T-test or Mann Whitney U-test based on the results of normality. A one-sample T-test was used to compare the mean nutrient intake with the national nutrition guidelines.

Individuals who followed a vegan diet had an insufficient daily intake of selenium (35.5 ± 14 ug; $p = 0.030$), iodine (36.1 ± 17 ug; $p = 0.0001$), vitamin D (0.29 ± 0.46 ug; $p = 0.0001$), vitamin B12 (0.12 ± 0.85 ug; $p = 0.002$) and iron (female participants; 12.3 ± 3.1 mg; $p = 0.027$). Omnivores exceeded the recommended limits for saturated fats ($13.7 \pm 2\%$ total energy intake; $p = 0.001$), total fats ($40.3 \pm 6\%$ total energy intake; $p = 0.004$) and sodium (2786 ± 939 mg; $p = 0.0001$), and had an insufficient consumption of vitamin D (5.3 ± 3.3 ug; $p = 0.0001$), iron (female participants; 10.4 ± 4 mg $p = 0.007$) and dietary fibre (23.3 ± 7.3 g; $p = 0.0001$). There were no significant differences in anthropometric measurements or blood pressure values between groups. Although there was a trend of higher mean CRP levels for the omnivores (0.37 ± 0.54 ng/ml vs 0.02 ± 0.07 ng/ml for vegans), difference between groups remained statistically non-significant.

Independent of the preferred dietary habit, food choices must be adopted carefully including a variety of foods. Fortified foods and/or nutritional supplements are essential to ensure the nutritional adequacy of adults.

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References

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