

Vegetarians have healthier levels of disease markers than meat-eaters

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Vegetarians appear to have a healthier biomarker profile than meat-eaters, and this applies to adults of any age and weight, and is also unaffected by smoking and alcohol consumption, according to a new study in over 166,000 UK adults, being presented at this week's European Congress on Obesity (ECO), held online this year.

Biomarkers can have bad and good health effects, promoting or preventing cancer, cardiovascular and [age-related diseases](#), and other chronic conditions, and have been widely used to assess the effect of diets on health. However, evidence of the metabolic benefits associated with being vegetarian is unclear.

To understand whether dietary choice can make a difference to the levels of disease markers in blood and urine, researchers from the University of Glasgow did a cross-sectional study analysing data from 177,723 healthy participants (aged 37-73 years) in the UK Biobank study, who reported no major changes in diet over the last five years.

Participants were categorised as either vegetarian

(do not eat red meat, poultry or fish; 4,111 participants) or meat-eaters (166,516 participants) according to their self-reported diet. The researchers examined the association with 19 blood and urine biomarkers related to diabetes, cardiovascular diseases, cancer, liver, bone and joint health, and kidney function.

Even after accounting for potentially influential factors including age, sex, education, ethnicity, obesity, smoking, and alcohol intake, the analysis found that compared to [meat-eaters](#), vegetarians had significantly lower levels of 13 biomarkers, including: total cholesterol; [low-density lipoprotein](#) (LDL) cholesterol—the so-called 'bad cholesterol'; apolipoprotein A (linked to [cardiovascular disease](#)), apolipoprotein B (linked to cardiovascular disease); gamma-glutamyl transferase (GGT) and alanine aminotransferase (AST)—liver function markers indicating inflammation or damage to cells; insulin-like growth factor (IGF-1; a hormone that encourages the growth and proliferation of cancer cells); urate; total protein; and creatinine (marker of worsening [kidney function](#)).

However, vegetarians also had lower levels of beneficial biomarkers including [high-density lipoprotein](#) 'good' (HDL) cholesterol, and vitamin D and calcium (linked to bone and joint health). In addition, they had significantly higher level of fats (triglycerides) in the blood and cystatin-C (suggesting a poorer kidney condition).

No link was found for blood sugar levels (HbA1c), systolic blood pressure, aspartate aminotransferase (AST; a marker of damage to liver cells) or C-reactive protein (CRP; inflammatory marker).

"Our findings offer real food for thought", says Dr. Carlos Celis-Morales from the University of Glasgow, UK, who led the research. "As well as not eating red and processed meat which have been linked to heart diseases and some cancers, people who follow a vegetarian diet tend to consume more

vegetables, fruits, and nuts which contain more nutrients, fibre, and other potentially beneficial compounds. These nutritional differences may help explain why vegetarians appear to have lower levels of disease biomarkers that can lead to cell damage and chronic disease."

The authors point out that although their study was large, it was observational, so no conclusions can be drawn about direct cause and effect. They also note several limitations including that they only tested [biomarker](#) samples once for each participant, and it is possible that biomarkers might fluctuate depending on factors unrelated to diet, such as existing diseases and unmeasured lifestyle factors. They also note that were reliant on participants to report their dietary intake using food frequency questionnaires, which is not always reliable.

More information: This story is based on poster presentation EP3-33 at the European Congress on Obesity (ECO).

Provided by European Association for the Study of Obesity

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