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ORIGINAL RESEARCH

Australian Aboriginal plant foods: a consideration of their nutritional composition and health implications - A review of the evidence

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1. ABSTRACT

The analyzed study calculated the potential nutritional composition of over 800 plant foods traditionally available to Australian Aboriginal people. Assuming these foods provided 20-40% of daily energy, the authors estimated a relatively low intake of carbohydrates, especially starch, and a very high intake of fiber. They also hypothesized that the low glycemic index of these plant foods could reduce the demand for insulin.In the narrative of "The Choice to Live in Health or Illness" by Dr. A. Colonnese and R. Panzironi, the study contributes to the passage suggesting that the plant sources of Aboriginal hunter-gatherers could have had a low glycemic impact. Independent human studies show that low-glycemic index diets can reduce post-meal glucose exposure in some groups and improve certain indicators of metabolic function. However, conflicting results indicate that this effect is not uniform and does not prove that such a diet certainly prevents insulin resistance, type 2 diabetes, or other metabolic diseases.

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MISSION

LIFE Science Hub – Journal of Science was founded with the aim of making scientific knowledge accessible without giving up methodological rigour, quality of sources and authoritativeness of content. The journal promotes the dissemination of knowledge in the health, nutrition, medical and longevity sciences, building a bridge between the world of research and society.

Through articles, reviews, in-depth analyses and expert contributions, the Journal champions evidence-based medicine and science, fostering a correct interpretation of scientific data and countering misinformation. Every piece of content is developed with the aim of translating the complexity of research into understandable, useful and applicable information, while keeping intact the principles of accuracy, transparency and scientific independence.

Free from political, industrial and commercial influence, the journal stands as an authoritative and independent editorial space, dedicated to promoting scientific culture, professional development and the growth of health awareness among the public.

2. ANALYZED STUDY

The research question was whether the composition of plant-based foods traditionally consumed by Australian Aboriginal people could help reconstruct certain nutritional characteristics of their diet. The authors evaluated the hypothesis that, while representing a minority share of energy compared to animal-based foods, these plant sources contributed fiber, vitamin C, and low-glycemic index carbohydrates.The glycemic index indicates how quickly a carbohydrate-containing food tends to increase glycemia, i.e., the concentration of glucose in the blood. A more gradual increase in glucose generally requires a lower immediate insulin response. In the section of "The Choice to Live in Health or Illness" by Dr. A. Colonnese and R. Panzironi, the publication is relevant because it supports the reconstruction of a plant-based diet that is relatively low in starch and high in fiber.The study can document a nutritional estimate conditioned on the hypotheses adopted by the authors. However, it cannot directly demonstrate what actual individual consumption was, the insulin response measured in traditional Australian Aboriginal people, nor a causal protective effect against insulin resistance, obesity, diabetes, or cardiovascular diseases.

3. MATERIALS AND METHODS OF THE ORIGINAL STUDY

The publication calculated the average nutritional composition of over 800 Australian Aboriginal plant foods, both overall and by food group, comparing them with modern cultivated foods. Based on a theoretical diet of 12,500 kJ, equivalent to 3,000 kcal per day, the authors estimated the contribution of these plants when they provided 20-40% of total energy.The work is not described in the available abstract as a clinical trial, an observational cohort, or an experiment involving participants. Therefore, no human sample, inclusion or exclusion criteria, data collection period, experimental controls, measurements of glycemia or insulin, clinical endpoints, follow-up, or inferential statistical analyses are reported. This information is not provided in the available material.Since the accessible text is only an abstract, it is not possible to verify in detail the origin of the compositional data, the selection criteria for individual foods, the analytical techniques used to measure nutrients and glycemic index, or the statistical uncertainty of the estimates.

4. RESULTS

In the model proposed by the authors, if plant-based foods provided 20-40% of the energy in a 3,000 kcal diet, they would have contributed 22-44 g of protein, 18-36 g of fat, 101-202 g of carbohydrates, 40-80 g of fiber, and 90-180 mg of vitamin C. The practical significance of this estimate is that the plant-based portion could contribute significantly to fiber intake without making the diet particularly rich in starchy carbohydrates.The authors also indicated that all carbohydrates in the traditional diet considered were derived from plant-based foods and that more than half could have consisted of sugars from fruit and honey. According to their interpretation, the diet would have been relatively low in carbohydrates, especially starch, and high in fiber compared to the recommendations current at the time.The element most relevant to the book is the physiological hypothesis: plant-based foods containing carbohydrates would have had a low glycemic index and, therefore, could have generated a lower demand for insulin secretion. The abstract does not report values for glycemia, insulin, average glycemic index, P-values, or confidence intervals. It also does not report diagnoses of insulin resistance or diabetes in the populations considered.

5. INTERPRETATION

In simple terms, the study suggests that a plant-based portion consisting of fruits, roots, seeds, and other wild foods could provide carbohydrates within a fiber-rich food matrix. Fiber partially slows the intestinal absorption of carbohydrates and can attenuate the rise in glycemia after a meal. If a food causes a more moderate increase in glucose, the pancreas may need to produce less insulin in the immediate term.However, the segment actually documented by the publication is primarily nutritional and based on modeling: traditional Australian Aboriginal plant foods relatively low starch and high fiber intake prediction of a lower glycemic impact. The next step, i.e., lower insulin demand protection against insulin resistance, is a biologically plausible interpretation proposed by the authors, not a directly measured

clinical result.For "The Choice to Live in Health or Illness" by Dr. A. Colonnese and R. Panzironi, the scientific correspondence is therefore precise but limited: the publication supports the qualitative description of the plant portion as low in starch and high in fiber. It does not allow this historical reconstruction to be transformed into proof that a Paleolithic diet or a modern low-glycemic index diet alone prevents metabolic dysfunction.

6. INDEPENDENT SUPPORTING EVIDENCE

A randomized clinical trial conducted in Italy, Sweden, and the United States compared two Mediterranean diets for 12 weeks with the same amount of available carbohydrates, 270 g per day, and the same amount of fiber, 35 g per day, but with different glycemic indices. Among 156 adults with at least two characteristics of metabolic syndrome, the high-glycemic index diet produced average eight-hour glucose concentrations in women that were 23% higher on the first day and 37% higher after 12 weeks compared to the low-glycemic index diet. No significant differences emerged in men. This study directly confirms that the glycemic quality of carbohydrates can modify glucose exposure, but it also shows a sex-dependent effect and does not demonstrate a reduction in metabolic diseases [1].A second multicenter randomized trial followed 162 people with type 2 diabetes treated with diet alone for one year. Compared to a lower-carbohydrate diet, a high-carbohydrate but low-glycemic index diet showed a disposition index that was 0.12 h–1 higher at 12 months (95% confidence interval from 0.01 to 0.23). The disposition index combines insulin sensitivity and insulin secretion and is used as an indicator of pancreatic beta-cell function. However, insulin sensitivity and insulin secretion considered separately did not differ significantly; furthermore, this was a secondary analysis declared as exploratory by the authors themselves [2].A systematic review with meta-analysis of prospective studies evaluated the association between glycemic index or glycemic load and the onset of type 2 diabetes. In the studies deemed valid, an increase of 10 units in the glycemic index was associated with a relative risk of type 2 diabetes of 1.27, with a 95% confidence interval from 1.15 to 1.40. In other words, higher dietary glycemic index values were associated with a higher future incidence of diabetes. However, these are observational data: even with statistical adjustments, they cannot completely eliminate the influence of other lifestyle and dietary factors [3].Taken together, this research supports the general idea that carbohydrates with a lower glycemic impact can reduce the rise in glucose after meals and, in some contexts, be associated with more favorable metabolic indicators. Confirmation of protection against insulin resistance, however, remains incomplete, because not all trials find the same effect.

7. CONFLICTING EVIDENCE

The OmniCarb trial subjected 163 overweight adults, with systolic blood pressure between 120 and 159 mmHg, to four controlled diets for five weeks each. The diets varied in both carbohydrate quantity and glycemic index, within a DASH-style dietary pattern. When carbohydrate content was high, the low glycemic index diet reduced, rather than increased, insulin sensitivity by 20%, from 8.9 to 7.1 units, compared to the high glycemic index diet. When carbohydrate content was lower, the glycemic index did not alter insulin sensitivity [4].This result does not deny that low glycemic index foods can attenuate postprandial glycemia in other contexts, but it indicates that the effect on insulin sensitivity depends on the entire composition of the diet, the population studied, the duration of the intervention, and the outcomes measured. The trial also observed a reduction in triglycerides in the diet that was simultaneously low in carbohydrates and low in glycemic index, but not a reduction in insulin sensitivity compared to the high-carbohydrate, high-glycemic index diet. No directly conflicting evidence sufficiently relevant beyond this important trial has been identified; this does not prove the absence of contrary results.

8. QUADRO COMPARATIVO E SINTESI DELLE EVIDENZE

The table distinguishes the nutritional estimate from the original study from independent human verification and conflicting experimental evidence.

Quadro comparativo

Reference	Study type	Population or model	Main result	Direction of evidence	Strength of evidence
Original study	Compositional analysis and nutritional model	Over 800 Australian Aboriginal plant foods; no human participants reported	Estimate of relatively low carbohydrates, especially starch, and high fiber; hypothesis of lower insulin demand	biologically consistent evidence	preliminary
[1]	RCT	156 adults at risk of type 2 diabetes	In women, high glycemic index diet associated with 23% higher mean eight-hour glycemia initially and 37% higher at 12 weeks	direct confirmation	moderate
[2]	Multicenter RCT	162 people with type 2 diabetes treated with diet alone	At 12 months, low glycemic index diet associated with higher disposition index compared to low carb diet	indirect confirmation	moderate
[3]	Meta-analysis of prospective cohorts	10 studies valid for glycemic index and type 2 diabetes	Higher glycemic index associated with higher incidence of type 2 diabetes	indirect confirmation	moderate
[4]	Crossover RCT with controlled feeding	163 overweight adults with elevated systolic blood pressure	High-carbohydrate, low glycemic index diet associated with 20% lower insulin sensitivity	discordant evidence	moderate

9. SINTESI EDITORIALE E CONCLUSIONI

CONCLUSIONS

The study analyzed provides relevant support for the description of a traditional Australian Aboriginal plant-based diet that is relatively low in starch and high in fiber. The prediction of a reduced glycemic impact is biologically plausible and receives partial confirmation from independent clinical and observational studies. The hypothesis that this characteristic directly protects against insulin resistance and other metabolic dysfunctions is moderately supported, but requires more consistent and longer-term validation. It is not possible to attribute certain protection against chronic diseases to a single historical dietary pattern.

Aggiornato al 17/11/2026. Questo contenuto riflette una sintesi divulgativa delle evidenze scientifiche al momento della pubblicazione e non sostituisce il parere medico.

10. TRANSPARENCY AND SCIENTIFIC RESPONSIBILITY

Artificial Intelligence was used solely as a tool for editorial and documentary support. All content, interpretations, bibliographic citations and conclusions have been verified, reviewed and approved by the author, who assumes full scientific responsibility for them.

The manuscript was also subjected to independent peer review prior to publication.

To ensure the greatest transparency, the complete history of the article, including the dates of submission, revision, acceptance and publication, as well as information on the peer review process, is available on the dedicated Article History page.

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