

Evaluating the nutritional quality of UK meat and dairy analogues compared to conventional animal products using multiple nutrient profiling models

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An estimated 2–3% of the UK population are vegetarian or vegan⁽¹⁾, and meat and dairy analogues have become a rapidly growing section of the plant-based market⁽²⁾. It has been argued that these products benefit from a ‘health halo’ effect, and are perceived as healthier than conventional products simply by being plant-based⁽³⁾. The aim of this research was to compare the macronutrient profile of meat and dairy analogues to conventional products through both individual nutrient analysis and nutrient profiling models.

Product data for analogue foods were collected from the UK’s top 3 supermarket websites using both specified search terms and supermarket product categories. These were placed into 12 PHE and NDNS derived categories. Equivalent conventional foods were identified and categorised accordingly. Comparisons were made for each product category using nutrient values and six nutrient profiling models: UK Nutrient Profiling Model (UKNPM), Nutri-Score, Health Star Rating (HSR), WHO European Model, Keyhole and Choices International. Data were tabulated using Microsoft Excel and statistical analyses were completed on GraphPad Prism v9.1.0. Nutrient profiling data were assessed using Pearson’s chi-squared and Fisher’s exact tests, whereas median/100 g nutrient values were assessed first using the D’Agostino-Pearson normality test, then by Mann-Whitney U test or Welch’s t-test as appropriate.

After deduplication, the database contained 1140 analogues and 590 conventional products, and nutrient profiling classifications were calculated. Analogue meat products significantly outperformed conventional equivalents in HSR ($p < 0.0001$), Nutri-Score ($p < 0.0001$), UKNPM ($p < 0.0001$) and WHO ($p = 0.0300$). While overall, analogue meat products had lower values of energy ($p < 0.0001$) and saturated fat ($p < 0.0001$) and more fibre ($p < 0.0001$), they also had noticeably more salt ($p = 0.0001$) and less protein ($p < 0.0001$). A similar trend was observed in ready meals, with analogues performing better in HSR ($p = 0.0143$), Nutri-Score ($p = 0.0163$) and Choices ($p = 0.0417$); and containing less energy ($p < 0.0001$) and saturated fat ($p < 0.0001$) and more fibre ($p < 0.0001$), but less protein ($p < 0.0001$) than conventional. Interestingly, analogue milk products performed better than conventional in HSR, Nutri-Score and WHO, but worse in Choices. This discrepancy may be because, despite milk analogues having less saturated fat ($p < 0.0001$) and sugar ($p < 0.0001$), their protein content was significantly lower ($p < 0.0001$). This was also the case with yogurts, where analogues contained less sugar ($p < 0.0060$), but also less protein ($p < 0.0001$), causing them to perform worse than conventional in both Keyhole and Choices.

In conclusion, these data highlight the heterogeneity between nutrient profiling models. As might be expected, meat and dairy analogues typically have lower energy density, less saturated fat and more fibre and perform better than conventional products in some, but not all, profiling models. However, this is usually at the expense of protein and sometimes salt. As the market continues to rapidly grow, nutrition information should be monitored to establish whether the plant-based health halo remains valid.

References

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