

# A comprehensive survey of the cost of plant-based analogues and equivalent conventional food products in the UK

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Interest in plant-based diets has grown in recent years, driven by consumer concerns about both the environment and health<sup>(1)</sup>. Nonetheless, the majority of the UK population still regularly consumes animal products<sup>(2)</sup>. Although barriers (e.g. meat enjoyment, lack of information, unwillingness to change routine) to adopting a plant-based diet are well established<sup>(3)</sup>, the role of cost as a potential barrier has been less well examined. Therefore, the aims of this study were to determine the cost of plant-based analogues in the UK, and do a basket analysis comparing conventional and plant-based versions of the British Nutrition Foundation (BNF) 7-day meal plan<sup>(4)</sup>.

Data on analogue products from the UK's three biggest supermarket websites were collected between October and November 2020. Products were identified using search terms such as 'vegan,' 'plant-based' and 'meat alternative' and grouped into 3 categories: Dairy Products, Sweet Products or Savoury Products. Data on corresponding conventional products were then collected from the same websites for each subcategory. GraphPad Prism v9.1.0 was used for statistical analysis. Normality was tested using the D'Agostino and Pearson Test, and costs per 100 g and per serving were then compared using Mann-Whitney or unpaired t-tests. For the BNF meal plan analysis, 2 baskets were created containing 85 and 87 food products in the conventional basket (CB) and plant-based basket (PBB) using Tesco's website.

The final database, after deduplication, contained 1140 analogue and 590 conventional products. Median costs/100 g and costs/serving were significantly higher for analogues in the Savoury Products ( $P < 0.0001$  and  $P = 0.0090$ ) and Sweet Products ( $P < 0.0001$  and  $P < 0.0001$ ) categories. Although analogue and conventional Dairy Products showed no difference in median cost/100 g ( $P = 0.6502$ ), the analogue products appeared more expensive when examined as cost/serving ( $P = 0.0222$ ). Rationalising that a healthy diet should already be high in plant-based foods, we examined the costs of the BNF 7-day meal plan, which was devised to be high in fibre and low in free sugars. Interestingly, there was no difference in overall cost (CB=£120.20, PBB=£122.86;  $P = 0.98$ ) or total product weights (CB = 36.4kg, PBB = 34.5kg;  $P = 0.59$ ) between the two baskets. Although the PBB appeared to have slightly higher cost/100kcal, this was not significant (CB=£1.47, PBB=£1.69;  $P = 0.85$ ). We observed that while plant-based analogues cost more than conventional protein sources (£1.08/100 g versus £0.96/100g), 'whole food' sources, such as lentils and beans, cost much less (£0.26/100g).

In conclusion the plant-based analogues did in general cost more. However, when a healthy plant-based diet was costed as a whole, there was no significant price increase over a healthy diet with conventional foods. Focusing the diet around 'whole foods' such as whole grains and beans, as well as choosing to purchase analogues that are better value, such as milk alternatives and soups, can help to create a more cost effective and healthy diet.

## References

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