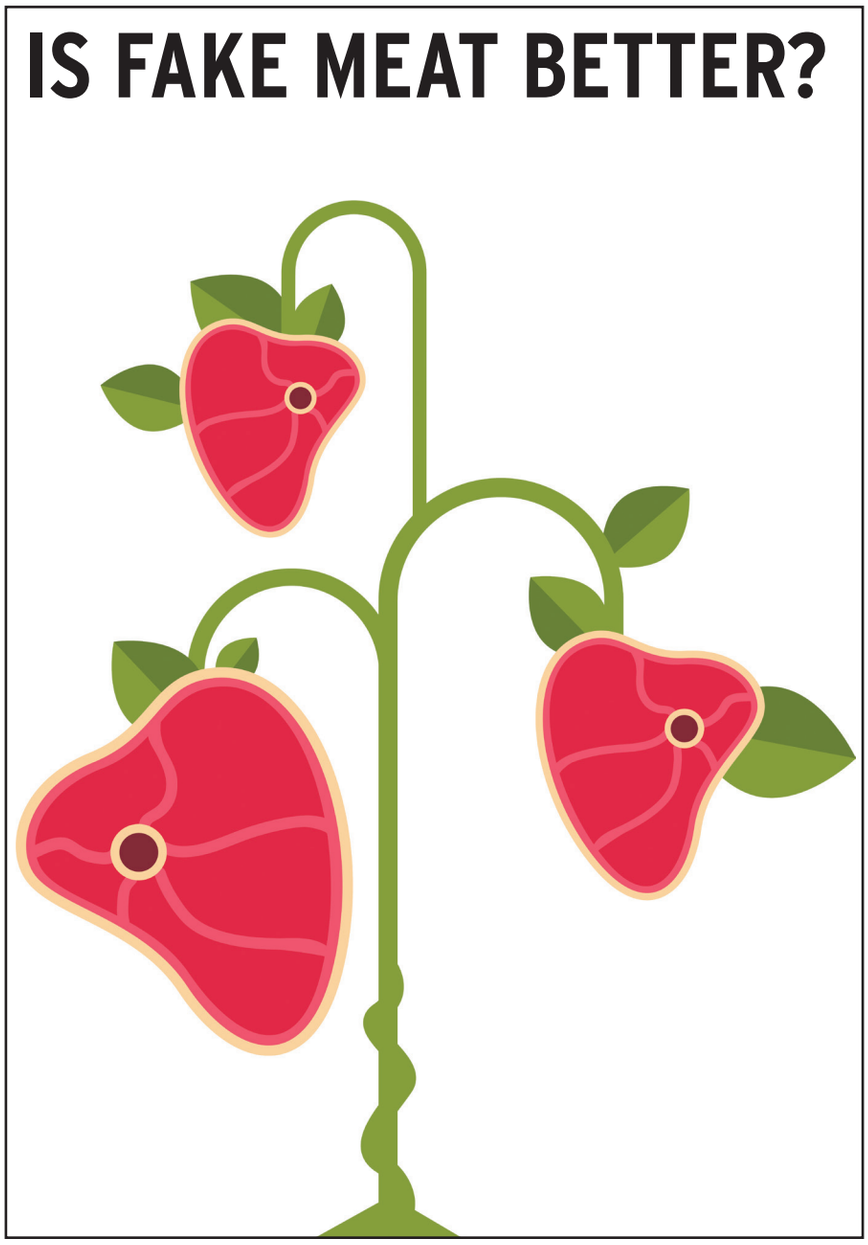
IS FAKE MEAT BETTER?



Plant-based meat may be all the rage, but is it a healthier swap? ***Hatty Willmoth*** looks at the pros and cons for nutrition

The fake meat industry is booming. Real meat has become tarnished by the spectres of a warming planet, factory farming and health warnings, and its imitations — from vegan sausage rolls to pulled p*rk salad bowls — are attracting vegans and meat eaters alike.

But is fake meat better for the planet and for our bodies? Or is it ultra-processed junk food in sheep's clothing?

Meat and two veg, minus the meat

It wasn't so long ago that vegetarians in the UK had very few choices. Traditional vegetarian ingredients such as lentils, pulses and tofu are staples in Asia but were foreign to many British kitchens. Typical British meals of meat and two veg didn't lend themselves to balanced, meat-free dinners so many vegetarians would be forced to eat the same as everyone else: meat and two veg, but minus the meat. And so the search for meat-like alternatives was on.

Enter soya mince. By the 1970s, it was even conveniently cooked in gravy and canned so that shepherd's pie was back on the menu for vegetarians. By the 1980s, dry mixes for nut roasts or soya-based sausages could also be found — usually in health food shops. By then, red meat was getting a bad rap whilst the association between vegetarianism and health was growing.

IN BRIEF

- **Meat-like alternatives have made it easier for people to eat less meat.**
- **Meat and plant-based replicas are not nutritionally interchangeable.**
- **Many, but not all, imitation meat products are ultra-processed.**
- **It is perfectly possible to cut down on meat and stick to real food.**
- **Manufacturers focus on the eating experience, not nutritional value.**

A healthier alternative?

Plant-based diets have long been associated with a plethora of health benefits such as lower risks of heart disease,[7] high blood pressure[8] and cancer.[9] This may be due to plant foods containing a range of nutrients such as fibre, vitamins, minerals and antioxidants — often a reason given for the health benefits associated with the Mediterranean diet, which is based on a wide range of vegetables and fruit.

Yet whether this health halo can be equally applied to modern meat-free alternatives remains to be seen. Many of these products are still new kids on the block and their widespread consumption is a recent phenomenon. Indeed, some experts argue that replacing meat with plant protein is not a straightforward swap because plants and meat are fundamentally different.

In 2021, scientists reported that metabolites (products of metabolism) from real and fake meats were as nutritionally dissimilar as animals and plants.[10] Of 190 metabolites analysed in 18 samples of grass-fed beef and a popular plant-based alternative, 171 varied between them and only 19 were shared. The biggest differences occurred in the profiles of amino acids, vitamins, and fatty acids. Lead researcher Stephan van Vliet said: "It is important for consumers to understand that these products should not be viewed as nutritionally interchangeable."

Bioavailability

And it's not just the nutrients that differ. It's also how the body responds to them.

One recent study comparing chicken with a soya- and wheat-based replica found that proteins in the plant-based substitute didn't break down into usable peptides as successfully as those from meat.[5] Furthermore, these plant-derived

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peptides were not absorbed as easily by human cells, suggesting that plant proteins may be less 'bioavailable' to the human body.

Some experts believe that this could be especially problematic for older adults who require protein to combat frailty and muscle loss — and the bioavailability conundrum extends to micronutrients too. These were the conclusions of a recent French study on over-50s (mostly over 65).[12] Researchers recommended that, depending on the age and sex of the individual, between 45% and 60% of protein in an older person's diet should be animal-derived. This, they said, was advisable to avoid deficiencies in vitamins D, B12 and B6, omega-3, riboflavin, iron and zinc; because micronutrients, not just protein, are more easily absorbed from meat.

What this suggests is that even if the taste and packaging of a veggie burger makes it feel like we've replaced like with like, we probably haven't.

Ultra-processed

Yet modern meat alternatives have possibly done more for vegetarian choice than bean burgers or nut cutlets ever could. Some of today's veggie burgers are uncannily beef-like in texture, char like the real thing, ooze blood-like juice, and deliver a convincingly umami taste. They are also usually lower in saturated fat and cholesterol; a feature that, for decades, has been used to signify a healthier product. For many of these products, however, their hefty ingredients lists place them in the category of 'ultra-processed' foods.

The term 'ultra-processed' food was coined by nutrition researchers at the University of São Paulo, Brazil, who developed the NOVA food classification system. This categorises foods into four groups based on how much industrial processing they have undergone. Ultra-processed food, the fourth category, contains industrially-processed ingredients that typically wouldn't be added to homemade foods; such as protein isolates, stabilisers, and sweeteners such as high-fructose corn syrup.

Currently, many meat alternatives fall into this category, including products from industry leaders such as Quorn and Beyond Meat. Quorn's vegan fillets, for example, contain mycoprotein, potato protein, pea protein, firming agents, flavourings, wheat gluten, pea fibre, and stabilisers.[13] Beyond Meat's Beyond Burger contains pea protein, rapeseed oil, coconut oil, rice protein, flavouring, stabiliser (methyl cellulose), potato starch, apple extract, colour (beetroot red), maltodextrin, pomegranate extract, salt, potassium chloride, concentrated lemon juice, maize vinegar, carrot powder and emulsifier (sunflower lecithin).[14]

A spokesperson from Beyond Meat wasn't available to comment. However, in a statement to *Optimum Nutrition*, Quorn's head of nutrition Dr Hannah Theobold said: "We use additives only where they are absolutely necessary and are always looking at ways to improve our products."

Unknown consequences

Although many readymade foods and snacks contain such ingredients, one concern is that they are still relatively novel and it is unknown whether or how they might affect our health. Some research, for instance, has associated ultra-processed foods with elevated risk of obesity, type 2 diabetes, cardiovascular disease, depression, various cancers and early death.[15]

"It's not real food," says Heather Rosa, Dean at the Institute for Optimum Nutrition, cautioning that consuming large quantities of modified plant proteins may come with as yet unknown consequences.

"Were we ever designed to eat that level of pea protein?" she says. "In nature, you would never have been able to eat that much of the original plant to get the amount of protein that's extracted down into a product."

Plus, she insists, the selling point that these products are lower in saturated fat — and therefore healthier than meat — is not particularly compelling. "We've been eating saturated fat for millennia," she says. "It's not the saturated fat that's the problem, it's when you ultra-process food and you put a lot of other poor-quality foods in with it — especially damaged oils. The majority of the evidence [concerning risk factors for] heart disease is looking at damaged fats and sugar in the diet.

"Saturated fat is stable. It can survive high-temperature cooking. It contains fat-soluble vitamins, which vegetable oils don't, and it's satiating. […] I think it's just crazy, in the 21st century, to still have this phobia of saturated fat."

Not created equal

Some substitute meat companies, however, reject the ultra-processed label. Chris Jenny, joint founder and director of EatPlanted says: "Consumer

THE ENVIRONMENTAL ARGUMENT

Many people switch from real to fake meat for environmental reasons. A seminal study that hit the headlines in 2018[1] argued that the best thing an individual could do to combat climate change was stop eating meat.[2] Researchers used a dataset based on 40,000 farms in 119 countries and covering the 40 food products that represent 90% of all human food consumption. If we got rid of the meat and dairy industries, they said, global farmland could be reduced by more than 75% and still adequately feed the world. Not to mention, greenhouse gas emissions, pollution and a number of other major climate concerns would considerably benefit.

Lead researcher Joseph Poore from the University of Oxford stated: "A vegan diet is probably the single biggest way to reduce your impact on planet Earth, not just greenhouse gases, but global acidification, eutrophication [the over-saturation of minerals in bodies of water], land use and water use."

Yet the study showed that even reducing meat consumption — not necessarily going fully vegan — could make a significant difference. If the most harmful half of meat and dairy production was replaced by plants, we would still enjoy about two-thirds of the estimated benefits of converting it entirely.

Currently, 85% of UK farmland is used to produce meat or animal feed. There have been calls by politicians and charities to use as much as 70% of this land for growing plants and trees, for the sake of the UK's climate goals.[3]

Enter fake meat: plant-based alternatives have an estimated median carbon footprint 93% smaller than beef.[4] Scientists have suggested that replacing even 20% of the world's beef consumption with microbial proteins, such as Quorn, could cut deforestation in half.[5] A recent review of 43 studies into the health and environmental impacts of plant-based foods, conducted by researchers at the University of Bath, also concluded that plant-based 'meat' was significantly "healthier and more sustainable than animal products".[6]

health was for us the big thing that was missing [within the sector].” He insists that because ‘planted’ chicken and pork contain no additives such as stabilisers, emulsifiers or acidity regulators, “for a fact, it’s not ultra-processed”.

To create ‘planted’ chicken, pea is heated and fermented, its starch removed, and water and rapeseed oil added. For the pork version, oats and sunflower press cake (a “nutritious” by-product of sunflower oil production) are added too. This, Jenny says, creates an imitation meat with a broad amino acid spectrum that’s low in saturated fat, high in fibre, and naturally rich in vitamin B12.

Intolerances and allergies

Whether plant-sourced vitamin B12 is as bioavailable to us as B12 from meat is unclear. However, according to Rosa, we might as well stick to meat — stating that meat is better digested than fake alternatives. Some products, she points out, are associated with food intolerances or allergic reactions.

“Some of these things are actually allergens — soy is a well-known allergen,” she says. “And you get a whole range of anti-nutrients [in plants] as well, like oxalates, etc…These are naturally-inherent chemicals found in plant-based foods to protect the plant from being eaten, basically. Many of them can cause gastrointestinal dysfunction and prevent uptake of nutrients.”

And it’s not just soy that can be problematic. Quorn product labels

Lentils, chickpeas, tofu, tempeh, seitan, beans – even eggs, dairy and fish – offer plenty of ways to eat less meat and stick to real food

state: “Mycoprotein is high in protein and fibre which may cause intolerance in some people”; whilst Beyond Meat labelling states: “Peas are legumes. People with severe allergies to legumes like peanuts should be cautious when introducing pea protein into their diet because of the possibility of a pea allergy”.

Rosa adds that consumers should not assume meat alternatives are also good for the environment. “They’re mono-cropping pea protein, soy protein…That’s just as disastrous [as meat production]. And, in fact, to actually spin and make this protein into something that looks like meat, requires massive input in big industrial plants.”

Rosa also says we shouldn’t aim to remove animals from agriculture, because of their invaluable role in regenerative farming. It’s not as simple as livestock being bad and crops good; irresponsible plant agriculture can do plenty of environmental harm while responsibly kept animals can be environmentally restorative. (See p.16)

Traditional options

People have been eating non-meat meals for millennia. Lentils, chickpeas, tofu, tempeh, seitan, beans — even eggs, dairy and fish — offer ways to eat less meat and avoid ultra-processed food.

Rosa says: “I don’t have a problem with pulses and things like that — eat them to your heart’s content! But once you start messing with food, and processing food, that’s where the problem comes for humans and the environment.”

Switching to a real-food, plant-based diet, however, does involve cooking — and for many, that’s not an option. For people who want to eat less meat and can’t cook, for whatever reason, fake meats enable people to throw something in the oven for a quick, easy — and recognisable — dinner.

Theobold from Quorn says: “Familiar formats can help people transition to a reduced-meat diet, because they can easily substitute meat with a meat-free alternative without having to worry about how to use the meat-free version.”

In literature provided to *Optimum Nutrition*, Beyond Meat states its “ultimate goal” is to “[build] meat from plants that is completely indistinguishable in flavour, appearance, aroma and texture”.

Manufacturers make what we will buy; and given that many fake meats replicate fast food, this perhaps reflects modern western food preferences.

In an opinion piece for *Gizmodo*, science writer Ryan F Mandelbaum wrote: “The entire point of plant-based burgers is to let meat-avoiding people occasionally indulge in the same garbage as everyone else.”[16] If that’s the goal, it makes sense why some companies justify adding all manner of ingredients, processed in all manner of ways, for the sake of an eating experience as similar to meat as possible.

It’s just once it’s inside us, the difference is clear.

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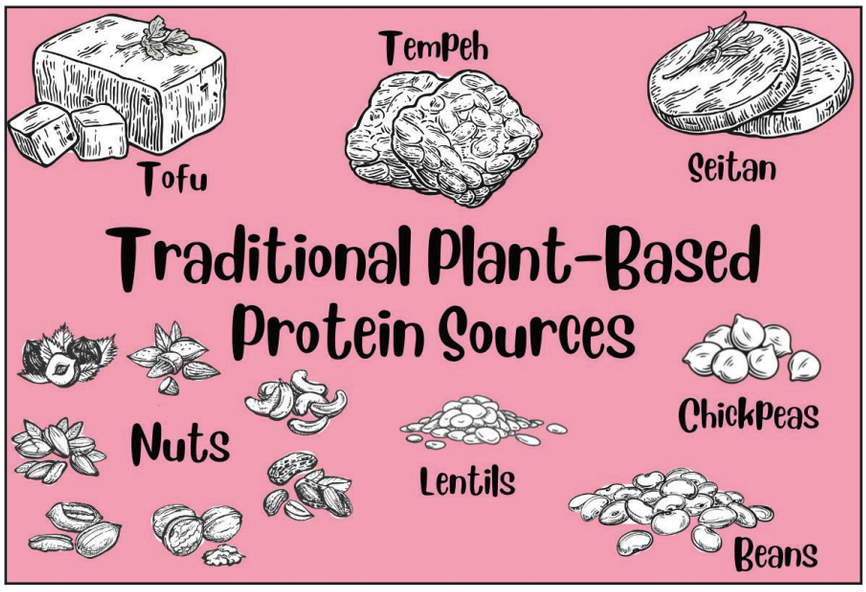

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