

The 'super soup' that's the equivalent of eating 1kg of raw broccoli

Biofortified foods are creating a buzz worldwide, with one broccoli soup holding promise of reducing disease and lowering blood sugar.

By Charlotte Lytton 21 June 2023 • 2:00pm

On a field in Fife, rows of GRextra – a strain of “super-broccoli” – are coming into bloom. Following research showing that it successfully reduced chances of type 2 diabetes and lowered blood sugar levels among consumers, this vitamin-rich veg may hold the key to overhauling the nation’s diet, its creators believe – combating our nutrient deficiencies and streamlining our food intake in one fell swoop.

“GRextra can’t turn back time” says SmarterNaturally, the company who has patented the broccoli and turned it into a soup to be consumed once a week. But, they claim, it can “reverse the shift” our cells undergo as we age, which leads to slowing metabolism – a possible trigger for cancer, heart disease and neurodegenerative illnesses such as Parkinson’s.

With five times more glucoraphanin (a cell-protecting compound) than is found in regular broccoli, the soup is equivalent to eating five raw heads of the vegetable. “The vegetable has a very low impact on lifestyle intervention and therefore can be very sustainably incorporated into someone’s weekly diet,” says Laura Knight, the company’s CEO.

The broccoli has been biofortified, or bred to be nutrient-dense, rather than genetically modified. Genetic modification typically involves introducing a strand of DNA to the plant in question’s genome, or altering its characteristics, whereas biofortification is achieved by specialised breeding. This may make it more palatable to consumers than the controversial “Frankenfoods” altered to the point of little resemblance to their original state.

Biofortified broccoli is part of a growing trend. There’s “quite a bit of buzz about biofortification,” explains Professor Cathie Martin of the John Innes Centre (where GRextra was originally developed). Other vegetables could soon be packing a far greater vitamin punch, she believes. “People are starting to realise that we’re suffering from not enough micronutrients [vitamins and minerals the body requires in small amounts] and also phytonutrients [plant chemicals that contribute to good health] in our diet,” she explains – with the biofortification breeding process upping the quantity of



nutrients in individual species.

SmarterNaturally are now ramping up production of the strain, originally found in Sicily by Professor Richard Mithen of the University of Auckland. According to the company’s trials, the product – which costs £5 per portion, or £20 for a monthly subscription – did not have an instant effect but rather lowers and maintains consumers’ blood glucose levels over around six months. “It’s a bit like taking your car for a service and getting it re-tuned so that it works optimally and efficiently,” Knight says of the product, which they are looking to expand to other flavours.

The idea of a single weekly veg serving slashing your illness risk may seem eyebrow-raising, but the experts don’t think it’s that far fetched.

“While it’s unlikely that this produce alone will have a big impact, it could contribute to the benefit of a healthier eating pattern that can help people reduce blood sugar levels and potentially reverse type 2 diabetes,” says David Cavan, consultant endocrinologist at the London Diabetes Centre. “There is a lot of evidence that leafy green veg are associated with reduced risk of developing the condition,” he adds – including research from the University of Leicester, which



SmarterNaturally has patented this 'super-broccoli' and turned it into a soup to be consumed once a week CREDIT: Getty



'There is a lot of evidence that leafy green veg are associated with reduced risk of developing type 2 diabetes,' says Cavan



Genome-edited tomatoes have relatively recently hit shelves in Japan CREDIT: Getty

found that one and a half daily servings cut chances by 14 per cent. Type 2 diabetes, which is typically caused by lifestyle factors such as an unhealthy diet, currently affects around 4 million people in the UK, and accounts for 10 per cent of NHS spend.

How we consume these superfoods also makes a difference. While supplements can be taken to boost certain vitamin deficiencies, eating the foods in their whole form means that micronutrients within them, from fibres to minerals, are processed in the gut, and typically at higher levels than via cooked or pill versions. Extracting the glucoraphanin and putting it into capsules, for instance, could achieve similar results to the soup, but only if several very large ones were consumed at once. SmarterNaturally's product, which is in part funded by UK Research and Innovation (which is seeking to make Britain a world leader in biofortified foods), is made from mixing their freeze-dried raw broccoli blend with 250ml of boiling water.

While broccoli, mushrooms and tomatoes with stickers boasting their high vitamin D content have periodically made their way onto supermarket shelves, the process of creating turbo-charged veg can be long – to the tune of decades, Martin adds – as a result of the regulations around products with health claims. She is currently working on a provitamin D-rich tomato, edited to increase the amount of vitamin D3 (key for muscle, bone strength and immune function) when exposed to UVB light. This crop could, it is hoped, benefit the one in six UK adults who suffer vitamin D deficiency, which is linked to higher cancer, dementia and mortality risk.

Genome-edited tomatoes have relatively recently hit shelves in Japan, via Sicilian Rouge – the breed known as the “first CRISPR [gene-edited] food to hit the market”.

Modified to contain high levels of GABA (neurotransmitter gamma-aminobutyric acid), research has shown that they could reduce blood pressure among consumers. While genetically modified foods have long divided shoppers, changing the terminology of old, from genetically modified to genome-edited, appears to have quieted the former backlash against bioengineered produce. CRISPR technology has also been used in recently concluded UK field trials to create wheat with reduced levels of asparagine, a carcinogenic contaminant that occurs when bread is toasted or baked.

These “represent the tip of the iceberg in terms of the benefit potential [of biofortified foods],” says Stuart Smyth, associate professor in the department of agricultural and resource economics at the University of Saskatchewan. As food prices rise at the fastest they have for 45 years in the UK, cultivating more produce of this kind would also give households the ability to consume “sufficiently nutritious food, while possibly purchasing fewer vegetables.”

It would also serve as some counterbalance to the ultra-processed foods that dominate the modern diet, and currently account for 50 per cent of what we eat, Cathie Martin says. Consumers and the industry alike must “realise that we can't go on eating junk food and not pay any consequences.”

Martin says: “Maybe you can't get people to eat five helpings of fruit and vegetables a day,” per the old edict, but by improving the quality of those we eat via fortified foods, “you're more likely to be healthy in old age and so reduce costs for the healthcare system, and also have a better quality of life.”