

Are you a **BIG** **DIPPER?**

Constantly hungry and struggling to lose weight? You could be someone whose blood sugar levels drop after eating. But help is at hand, as Anita Bean discovers

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Do you find it hard to stave off snack-attacks throughout the day, or eat a meal only to find you're ravenous two hours later? Well, you're not alone. According to the latest findings from PREDICT, the biggest ongoing nutritional research programme in the world, those hunger pangs you experience in the hours after eating particular foods may be caused by a large drop in your blood sugar level.

Almost everyone experiences a blood sugar dip in the two to four hours after eating, but some people - 'big dippers' - experience far bigger ones, making them feel hungrier sooner and wanting to eat more food than 'little dippers', whose responses are smaller. For the big dippers, resisting snacking requires much more willpower.

During the PREDICT study, which lasted for two weeks, researchers measured the blood sugar levels of 1,070

people after eating standard breakfasts and other meals. The participants wore continuous blood glucose monitors to keep track of their blood sugar levels throughout the day and recorded when and what they ate via an app, as well as reporting their levels of hunger and alertness. Researchers found big variations between individuals in how their blood sugar levels responded to various foods. Big dippers were more likely to feel hungry sooner than little dippers, despite having eaten an identical meal, and went on to consume around 300 more calories over the course of a day - which could lead to a potential weight gain of several pounds in a year.

Dr Sarah Berry, a nutrition scientist from King's College London and the study lead, says: 'It has long been suspected that blood sugar levels play an important role in controlling hunger, but the results from previous



studies have been inconclusive. We've now shown that sugar dips are a better predictor of hunger and subsequent calorie intake than the initial blood sugar peak response after eating.

'Two people could eat exactly the same meal but have very different blood sugar responses,' Dr Berry continues. 'What this means is that there is no "right" way to eat – some people may need to reduce carbohydrates, whereas others may be able to eat them frequently.'

Whether you're a big or little dipper is likely to result from a combination of your unique biology, meal choices, activity levels and metabolism. Choosing foods that reduce the likelihood of having big dips could help to control hunger and body weight in the long-term. 'Our research showed that our genes play only a small role in determining our blood sugar levels,' says Dr Berry. 'Many factors, from your gut microbes, the time of day you eat most of your food to how much exercise you take and how well you sleep, affect your blood sugar response.' In other words, even if you're born a big dipper, it is possible to gain better control over your hunger without the need for extra willpower.


Research is showing there is no 'right way' to eat


HOW CAN YOU FIND OUT IF YOU ARE A BIG DIPPER?

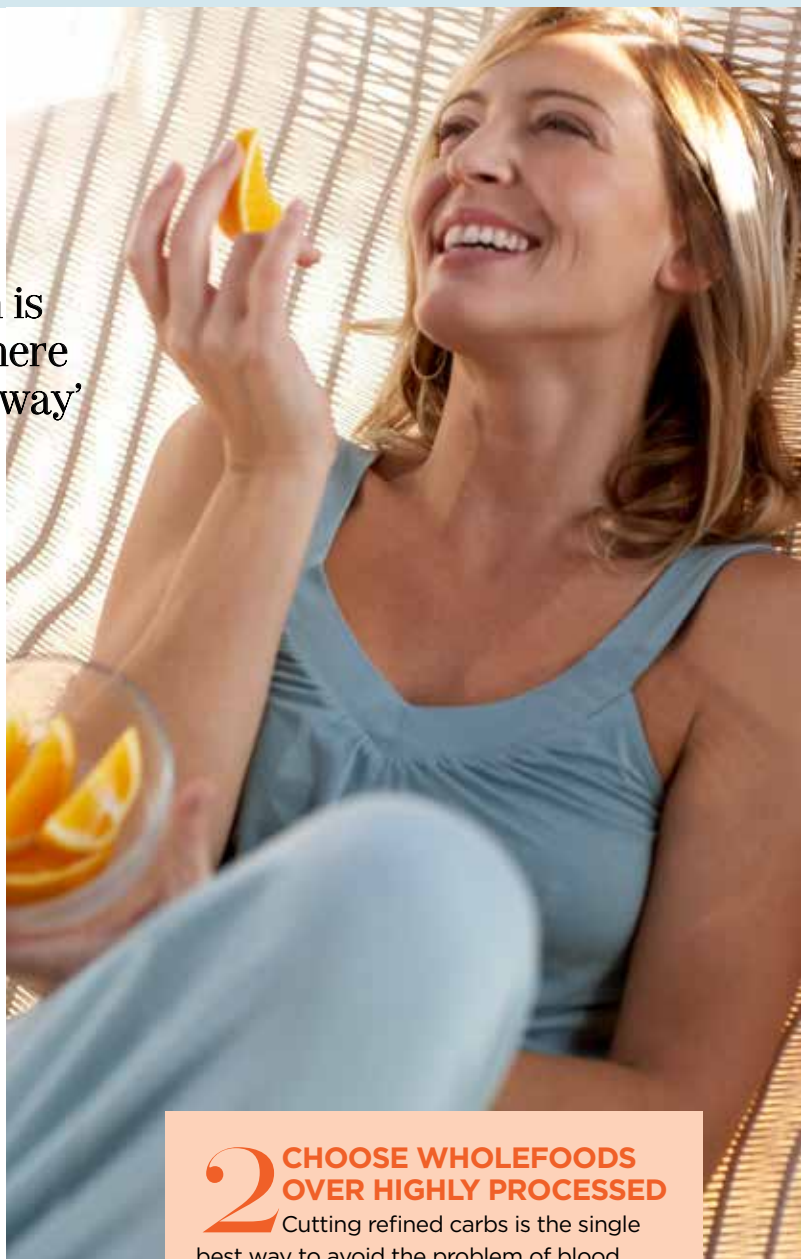
If you want an accurate picture of your blood glucose levels, you'll need to invest in a continuous glucose monitor (a device that tests levels every few minutes). However, these are expensive and available only through commercial providers. Alternatively, you can get an idea of how your blood sugar responds to meals by listening to your body. 'Keep a diary of what you eat and note how you feel two to four hours after meals,' suggests Dr Berry. 'If certain foods make you feel more hungry, less energetic or alert, you may be a big dipper to those particular foods.'

6 WAYS TO TAME YOUR HUNGER

1 AIM TO EAT MOST OF YOUR CALORIES EARLY

If you're a big dipper, eating most of your calories in the morning rather than the evening may help you gain better control over your hunger. Scientists at The University of Alabama in the US, who had study participants eat from 8am to 2pm, reported that it decreased their daily swings in hunger and curbed their appetite in the evening – a time when many of us tend to overeat.

'As a general rule, it's better to consume carbohydrates in the early part of the day rather than in the afternoon or evening,' explains Dr Berry. 'Our research showed that carbohydrates in the morning causes a smaller blood sugar spike (which is likely to lead to a smaller dip), than having the same amount later in the day.' This is more pronounced in those under 60 years of age, but makes little difference to the over-60s, who have broadly similar blood glucose responses in the morning and afternoon.



2 CHOOSE WHOLEFOODS OVER HIGHLY PROCESSED

Cutting refined carbs is the single best way to avoid the problem of blood sugar dips. Foods such as white bread, breakfast cereals and biscuits cause a rapid release of sugar in the bloodstream.

'Wholefoods, including fresh and frozen fruit, vegetables, nuts and oats contain carbohydrates within the natural food matrix and are also high in fibre, which slows the rate of absorption and prevents blood sugar dips later,'

says Dr Berry. 'For example, if you eat an orange rather than drinking juice, or eat whole oats rather than instant oats, you'll get a much better blood sugar response.' Don't be afraid of high fat foods such as nuts; researchers found that much of the fat in nuts is retained in the food matrix.



3 GET ENOUGH SLEEP

'How much sleep you get and when affects your blood sugar responses,' says Dr Berry. 'If you are sleep deprived, you are more likely to have blood sugar spikes and bigger dips in blood sugar after eating. Our research shows that when people increase their sleep, they automatically eat fewer sugary foods and refined carbs.'

Just a few nights of sleep deprivation can upset your hunger cues, making you more likely to overeat. In one study, people reported feeling less satisfied after a meal when they slept less than five hours a night for four consecutive nights.



5 INCLUDE MORE BEANS, BERRIES AND NUTS

Plant foods – fruits, vegetables, beans, lentils, whole grains, nuts and seeds – are rich in fibre and biologically active molecules called polyphenols, which feed our gut bacteria (microbiota). A healthy microbiota is a diverse one that is associated with a lower overall risk of disease. 'Our research has shown that the composition of our gut microbiota is closely associated with our blood sugar response,' explains Dr Berry. 'If you can improve your gut microbiota through changing your diet, then you may improve your glycaemic response.' The best way to do this is by eating as many varieties of plant-based foods as possible. The more diverse plant foods you feed your gut bacteria, the more diverse they become and better able to balance your blood sugar and prevent big blood sugar dips. Incorporate polyphenol-rich berries, nuts and seeds to help 'good' bacteria thrive.

4 EAT CARBS WITH HEALTHY FATS OR PROTEIN

There's no need to cut all carbs, though. Oats, bread and pasta provide other valuable nutrients, so combine them with protein, such as fish and dairy, or healthy fats, such as avocado or nuts. Doing this produces a lower blood sugar response than eating carbs alone. That's because protein and fat slow the rate at which carbohydrate is digested and converted into blood sugar. For example, avocado or eggs on toast would be a better breakfast option than toast with jam to help keep you feeling satisfied for longer.



6 GO FOR A WALK BEFORE OR AFTER A MEAL

'Our study also showed that if you exercise immediately before or after a carbohydrate-rich meal, you will reduce the blood sugar rise and make a big dip less likely,' says Dr Berry. Researchers in New Zealand found that post-meal blood sugar levels dropped 12% on average when people walked for 10 minutes after three daily meals compared with walking for 30 minutes at any time of day. The biggest improvement was seen after an evening meal when the most carbohydrate was consumed. Another study at the University of Bath found that people who exercised before breakfast three times a week were better able to control their blood sugar than those who exercised after breakfast.

SNACKS FOR BIG DIPPERS

If you want a snack to tide you over until your next mealtime, here are some healthy options that won't cause big dips in your blood sugar levels.

Celery sticks filled with peanut butter or cream cheese



Hummus with carrot sticks



Avocado on wholegrain toast



Apple slices with almond butter



Spicy chickpeas: Drain a 400g tin of chickpeas, toss with 1tbsp olive oil, 1tsp each smoked paprika, cumin and coriander and a pinch of salt; spread out on a baking tray and bake at 200°C (180°C fan) mark 6 for 35min, stirring halfway, until crispy □



Watermelon topped with feta cheese



A handful of mixed nuts or seeds



Plain Greek-style yogurt with blueberries



Olive tapenade with wholemeal pitta bread

