

**a smoothie =
2 portions of fruit**

and other interesting facts





hello

We've been working hard to find out exactly how healthy our smoothies are. After talking to the experts and doing lots of in-depth homework, we thought we'd make this little book to tell you all about it. Much nicer than a long, boring report.

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1 section one: the scientific stuff

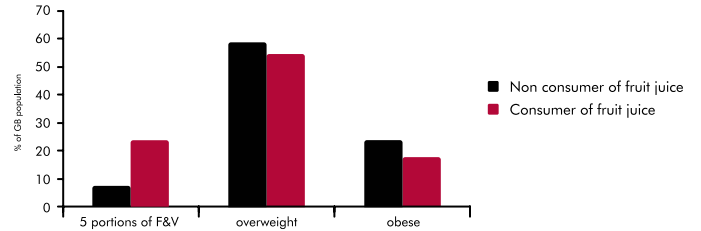
juice is good...

People like fruit juice. They have for a long time and it seems like it's a habit that's here to stay. The best thing about juice is that it has a positive impact on people's nutritional intake and thus their health. But you don't have to take our word for it. Evidence from the National Diet and Nutrition Survey (NDNS, 2000) shows that:

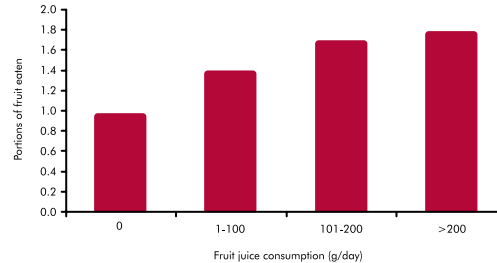
- Juice consumption continues to rise steadily in the UK
- Juices contribute positively to the nation's health
- People who drink juice also eat more fruit

And there's new evidence to show that juice can provide the same benefits as those gained from eating fresh fruit (FSA, Annual Report of Chief Scientist 2006/07).

Now, some more details. First of all, a clear set of facts. People who drink juice tend to eat more fruit and veg and are less likely to be overweight or obese. This is illustrated by the graph at the top of the opposite page.



Here's another positive fact. People who drink fruit juice eat more fruit, not less (i.e. there's no substitution of fruit for juice).



Average daily intake of fruit (portions excluding fruit juice according to fruit juice consumption, NDNS, 2000).

...but smoothies are better

But this booklet is all about smoothies, and smoothies differ from juices in a few clear ways. Juices are as they sound – the juice of the fruit. Whereas smoothies are a mixture of whole crushed fruit, combined with pure and fresh juices. This means that smoothies have a different nutritional profile to juice, due to the inclusion of whole crushed fruit.

And the main differences are that smoothies are a source of fibre (juices can't provide fibre as they don't contain whole fruit), provide more vitamin C than juices, and provide more anti-oxidants than juices.

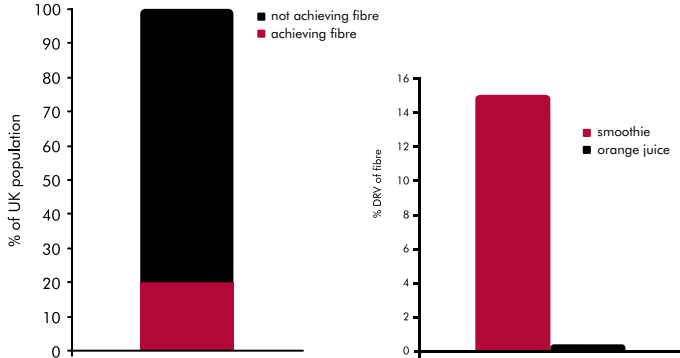
To illustrate that smoothies are higher in fibre and antioxidants than juice, here are some figures:

		smoothies*	freshly squeezed OJ
Energy	kcal/100ml	58	43
Protein	g/100ml	0.5	0.7
Carbohydrate	g/100ml	13.0	9.0
Sugars	g/100ml	12.0	9.0
Fat	g/100ml	0.2	0.0
Fibre	g/100ml	1.4	0.1
Vitamin C	mg/100ml	23.1	30
Source of fibre	> 1.5 per 100kcal	yes	no
Source of vit C	> 15% RDA	yes	yes
Anti-oxidants	ORAC (TE) μmol/100ml	1566	900

*Average of 8 innocent recipes.

fruit & fibre

Only one in five adults get enough fibre from their daily diet. So we think smoothies can help those who aren't getting enough, seeing as they provide 15% of the daily recommended value (DRV) for fibre (NSP), as these pretty charts show. The second graph clearly shows that smoothies are way better than juice



Graph 1: Percentage of UK adults achieving the fibre recommendation. (Source NDNS)

Graph 2: Percentage of of DRV for fibre from a 250ml serving of smoothie and orange juice.

two down, three to go

But perhaps the most wonderful smoothie fact is that each one is the equivalent of 2 portions of fruit – two of your five a day.

A 250ml smoothie contains at least 1 portion of whole crushed fruit (80g) and 1 portion of juice (150ml)

or

contains more than 80g of whole crushed fruit with the remainder of the second portion from fruit juice

...and that equals two portions.

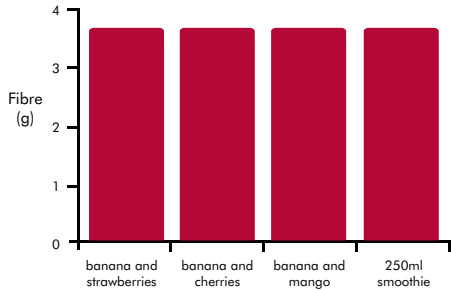
To further illustrate the fact that smoothies provide two portions of fruit, we can say that a smoothie is nutritionally equivalent to a medium banana and another portion of fruit.

Did you know?

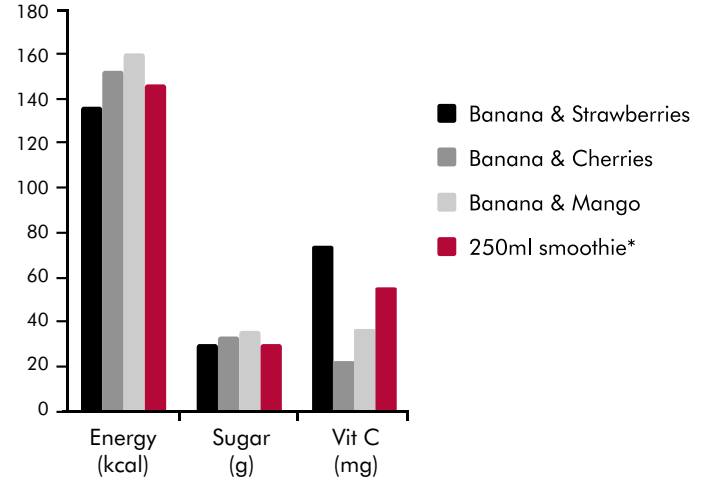
The Department of Health has update its guidelines on smoothies to recognize that smoothies can count for up to 2 of your 5-A-DAY? For more information go to:

http://www.5aday.nhs.uk/toptips/media_centre.html

Innocent smoothies are in-line with these guidelines and officially count for 2 portions of fruit.



Energy, sugar and vitamin C of 2 portions of fruit versus smoothie

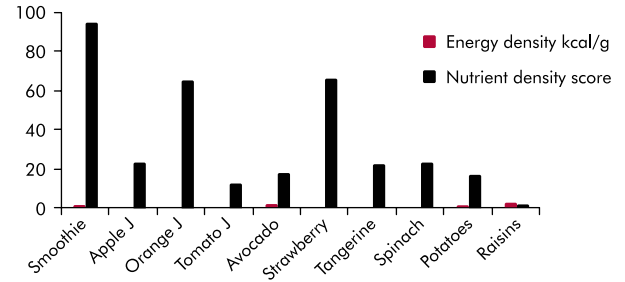


*Average of 8 innocent recipes compared to medium banana (100g)¹ and 80g of strawberries, cherries and mango.¹Source : Food Portion Sizes by Helen Crawley (HMSO)

2 section two: the other stuff

good calories

Now then, this nutrient density thing. Well, we classify nutrient density as vitamin C per portion (as per % RDA) plus fibre per portion (as a percentage of the GDA). Using these numbers, we can compare the nutrient density of smoothies versus juices and actual fruit. And the chart shows us something good – smoothies have a higher nutrient density than juice. Generally speaking, fruit has a low energy density and high nutrient density.



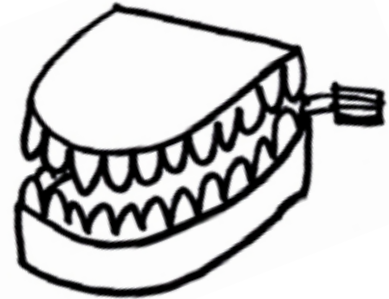
Nutrient density = vitamin C per portion (expressed as % labelling RDA) + fibre per portion (expressed as % GDA) Smoothie and juice portion = 250ml. Fruit portion = 80g

the truth about teeth

Anything that contains fruit (and that means whole fruit too) will contain sugar and acids that can impact on dental health. But there's new evidence to show that there's no difference between the sugar from whole fruit (intrinsic sugar) and sugar from juice (extrinsic sugar).

There are 3 studies in situ that have looked at the differences between whole, pulped and juiced fruits.

author	type of study	what did the study look for?	what were the results?
Hussein <i>et al</i> (1996)	Comparative study.	Apples, bananas and oranges were tested in the whole, crushed and juiced forms.	There were no significant differences in the acidogenic potential between intrinsic and extrinsic sugars.
Beighton <i>et al</i> (2003)	Cross-over randomised controlled clinical study.	Fermentation of sugars <i>in situ</i> from whole and pulped fruit.	No difference in the levels of sugars and acids between the whole and pulped form.
Issa <i>et al</i> (2003)	Prospective randomised cross-over controlled clinical study.	Compared the impact on enamel demineralisation <i>in situ</i> of whole fruit (intrinsic sugar) and juiced fruits (extrinsic sugar).	Intrinsic sugars had a similar impact to enamel demineralisation as extrinsic sugars.



Here's a picture of some teeth.

so, to summarise...

Thanks for reading this far. If you've got one of those photographic memories, you won't need to look at the next couple of pages. But if you need a small reminder, here's a summary of the science:

- The Department of Health's 5 A DAY states: "smoothies may count as a maximum of 2 of your 5 A DAY where they contain both pure 100% fruit juice and all of the edible pulped fruit and/or vegetable... one portion is defined as at least 150mls of fruit juice or 80g of fruit or vegetable.
- A 250ml innocent smoothie contains: at least 1 portion of whole crushed fruit (80g) and 1 portion of juice (150ml) or contains more than 80g of whole crushed fruit with the remainder of the second portion from fruit juice
- Smoothies are nutritionally equivalent to 2 portions of fruit.
- Smoothies have the same amount of sugar as a banana and another portion of fruit.
- Smoothies can make an important contribution to people's diet and health. Especially in terms of fibre, vitamin C and antioxidants.

- Smoothies give you 3.5g of fibre per serving – that's 15% of the DRV. This fibre can help to keep you full, so over-consumption is unlikely.
- Smoothies have a high nutrient density and low energy density (i.e. they are good calories).

Juices

- Juices contain no fibre.
- Some juices are only made from one type of fruit.
- 150ml of juice provides 1 portion of fruit (DoH guidelines).

Smoothies

- Smoothies are a source of fibre (3.5g per serving). That's 15% of your daily recommended amount.
- Smoothies are made from a variety of fruits.

bye for now

Well, that's it. We hope you've learned a few things about smoothies and juice and all that sort of thing. If you have any questions, queries, feedback, or just fancy a chat about fruit, you can call Shilpee on **020 8600 3939**, or email her at shilpee@innocentdrinks.co.uk

Want to read more? The following four pages contain all the references to all the homework we did. Probably best not to read them now if you're planning to operate any heavy machinery in the next five minutes.

slightly boring references

National Diet and Nutrition Survey, 2000. A survey carried out in Great Britain on behalf of the Ministry of Agriculture, Fisheries and Food and the Departments of Health, by the Social Survey Division of the Office for National Statistic and Medical Research Council Human Nutrition Research, London: The Stationary Office

Food Standard Agency, Annual Report of Chief Scientist 2006/07
<http://www.food.gov.uk/science/research/researchinfo/nutritionresearch/optimalnutrition/n05programme/n05listbio/n05051/n05051r/>

Hussain I, Pollard MA and Cuzon ME, 1996. "A comparison of the effects of some extrinsic and intrinsic sugars on dental plaque pH." International Journal of Paediatric Dentistry 6: 81-6

Beighton D, Brailsford SR, Gilbert SC, Clark DT, Rao S, Wilkins JC, Tarelli E and Homer KA, 2004. "Intra-oral acid production associated with eating raw fruits." Caries Research, 38: 341-9

Issa A, Toumba KJ, Preston T, Duggal MS, 2003. "Comparison of the effects of whole and juiced fruits and vegetables on enamel demineralisation *in situ*." Caries Research, 37(4):283



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