

Does the colour of our food affect its flavour?

Introduction:

We often associate colour with food although we may not always think about it. We expect certain foods to always be a certain colour for example: tomatoes to be red and bananas to be yellow. In fact this can be important to tell us that the food is good to eat, a green tomato or banana may well not be ripe and could give us a stomach-ache. Colour is also used when food is prepared, lemon sorbet is normally white or pale yellow and mint flavoured things are usually green.

Does this colour actually affect our sense of taste?

Hypothesis:

If we taste five sodas of different colours, but identical flavour, then we will judge the flavour of the sodas to be different.

Materials:

Clear lemon/lime flavoured soda pop;
Food colouring;
Disposable cups for the liquid samples;
Colour vision test (Ishihara 26 plate);
Score sheets

Method:

#1) For a few days before the experiment I set up a desk in the school corridor so I could advertise my experiment as we needed as many subjects as we could get. This also let me give out the permission slips.

#2) The sodas were prepared to give 4 coloured sodas (red, orange, green and blue) and 1 clear soda. All manufacturer's labels were removed and the sodas were simply labelled A, B, C, D and E.

#3) Each subject first took the colour vision test, with scores recorded for later analysis. The subjects needed to then taste each soda and record on the score sheet what flavour they thought the sodas tasted most like.

Example score sheet:

Consent Received _____

Picture	What is seen?		
1	12	6	Spots
2	8	3	Spots
3	70	29	Spots
4	Spots	5	2
5	Spots	5	3
6	Spots	17	15
7	74	Spots	21
8	6	Spots	8
9	45	Spots	37
10	5	6	Spots
11	9	7	Spots
12	16	32	Spots
13	Spots	73	22
14	Spots	5	8
15	Spots	21	45

Flavour Selector

	Cherry	Straw- berry	Orange	Clem- entine	Lemon	Lime	Apple	Blue- berry	Black- currant
Soda A	☐	☐	☐	☐	☐	☐	☐	☐	☐
Soda B	☐	☐	☐	☐	☐	☐	☐	☐	☐
Soda C	☐	☐	☐	☐	☐	☐	☐	☐	☐
Soda D	☐	☐	☐	☐	☐	☐	☐	☐	☐
Soda E	☐	☐	☐	☐	☐	☐	☐	☐	☐

Thank you for participating

Colour vision

Flavour score

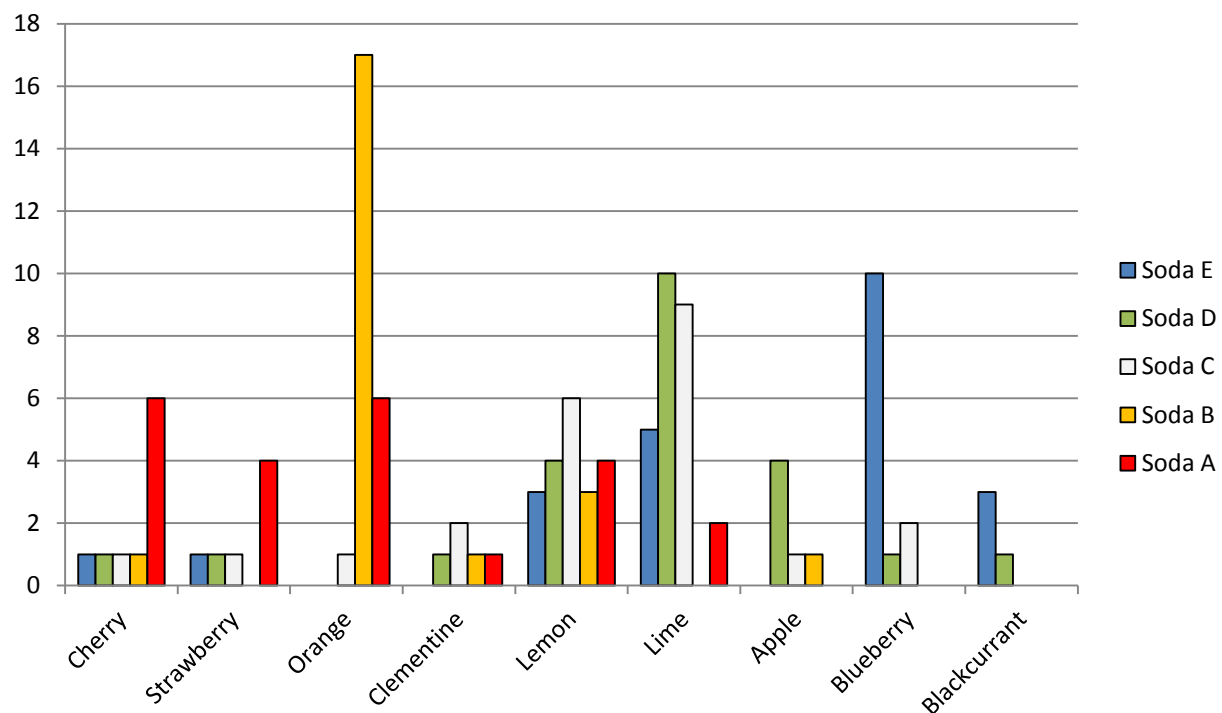
Results:

Number of subjects: 23

In the experiment all subjects scored a normal colour vision score, so colour vision anomalies did not affect our results.

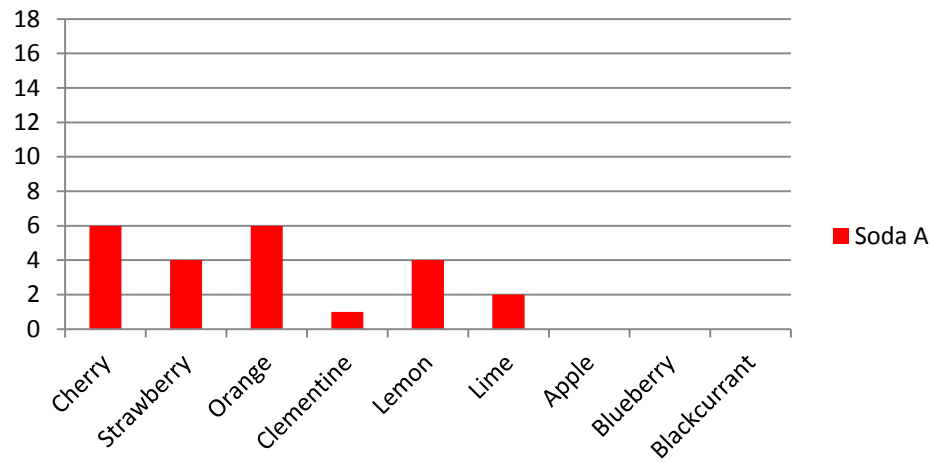
	Cherry	Strawberry	Orange	Clementine	Lemon	Lime	Apple	Blueberry	Blackcurrant	
Soda A	6	4	6	1	4	2	0	0	0	Red
Soda B	1	0	17	1	3	0	1	0	0	Orange
Soda C	1	1	1	2	6	9	1	2	0	Clear
Soda D	1	1	0	1	4	10	4	1	1	Green
Soda E	1	1	0	0	3	5	0	10	3	Blue

Combined flavour profiles:

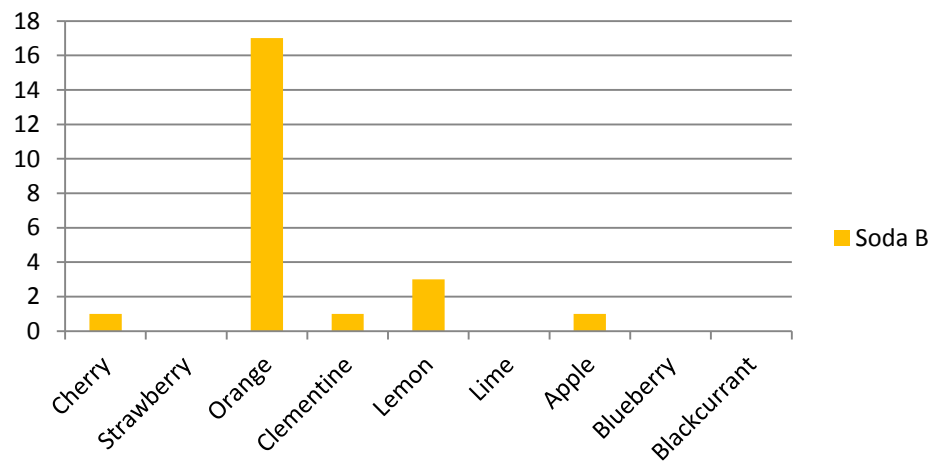


Individual flavour profiles:

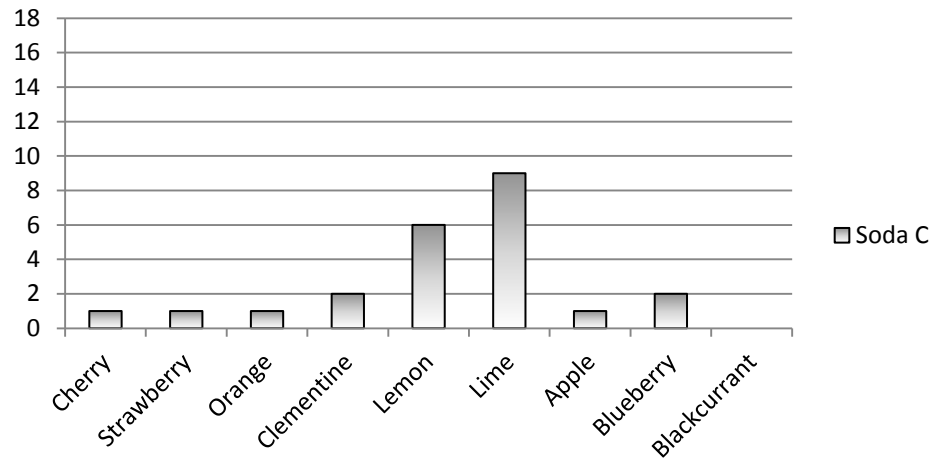
Soda A



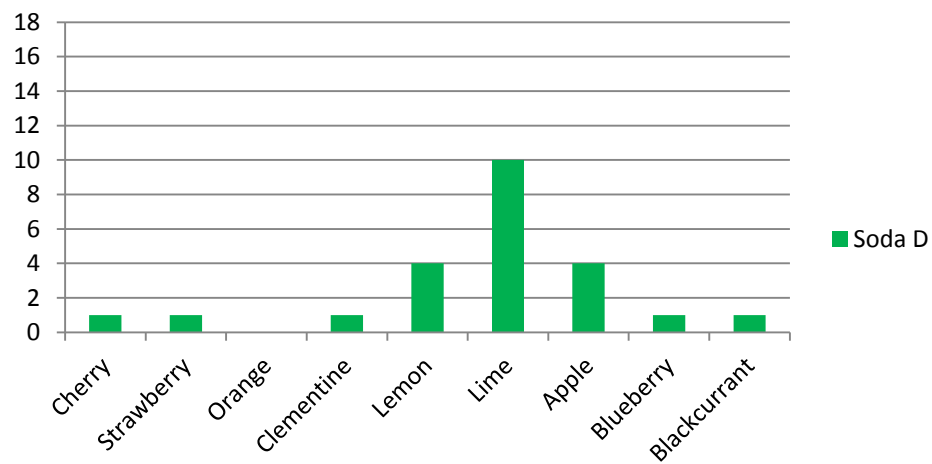
Soda B



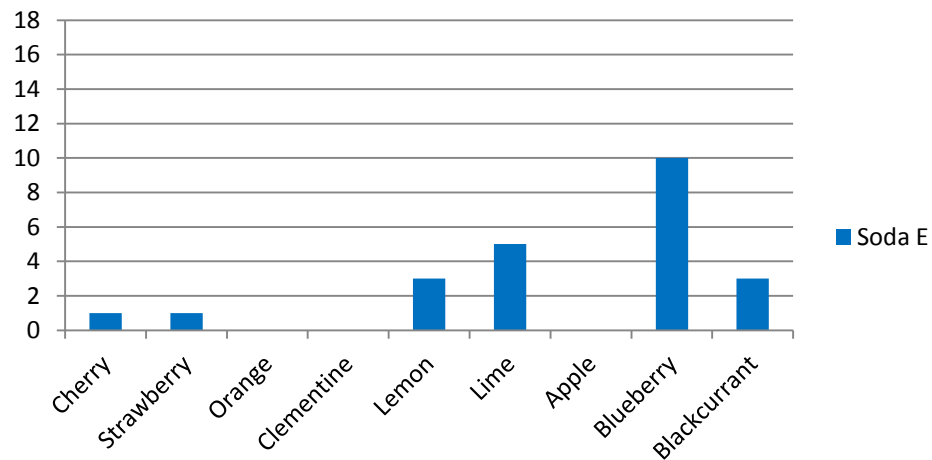
Soda C



Soda D



Soda E



Conclusion:

From my experiment the hypothesis seems to have been proven correct, the colour of our food does affect how we judge the flavour. Even though the flavour of the soda was always the same, the above flavour profiles show clear differences in how people thought they tasted.

In our experiment colour vision did not create an issue.

Discussion:

It is interesting that the colour which had the greatest affect on the flavour choice was orange. This may be due to the fact that you can get orange soda with orange colouring already. It also could perhaps result as the name of the colour is also the name of the flavour creating a very strong association between the colour and the flavour.

It would have been interesting to have repeated the test on someone with colour vision anomalies to see if this would affect the results.

In future if the test was being repeated it would be interesting to also take the subject's age. While I was performing the test I noticed that grown-ups were most likely to work out what the experiment was testing. This could perhaps affect their results.

I think that people associate colours with food because of their experiences. We like to eat bananas that are yellow and oranges that are orange. By having experienced this time and time again, it starts to be a natural expectation. We become conditioned to expect certain colours to have certain flavours, if they are not coloured correctly then it can appear to be wrong.

The “wrongness” of the colour of food has actually been used for marketing in the past, perhaps most noticeably by Heinz who produced a series of tomato ketchups in wild colours, including green, purple and teal.

Here is a picture of some purple ketchup:



YUCK!!