



From Dr A Majid Katme

## **As a cancer scare erupts over a chemical in the fizzy drink ... just how safe is a can of Coke?**

Defence: Bot Coca-Cola and Pepsi insisted their products were completely safe

The world is addicted to Coca-Cola. Each day, 1.6 billion cans and bottles of the sickly brown liquid are gulped down, making it the globe's most recognised brand.

But ever since it was first concocted as a brain tonic in 1886 (designed to treat 'sick headaches, neuralgia, hysteria and melancholy'), the makers of Coca-Cola have been secretive about what goes into their drink. American pharmacist and Coke founder Asa Chandler was so concerned that the recipe could fall into the wrong hands he reportedly never wrote it down.

That secrecy lives on today. Coca-Cola insists only two people alive know the formula, that they never travel on the same plane in case it crashes and that the list of ingredients is locked in a bank vault. But while the recipe for Coke is surrounded by the kind of mystique that marketing men dream of, the company found its formula under less welcome scrutiny this week.

For it has emerged that Coca-Cola in the U.S. has reduced levels of one of its ingredients following fears that it could cause cancer.

The chemical — 4-methylimidazole (4-MI) — helps to give the drink its colour, but is listed by Californian health officials as a potential carcinogen.

While European regulators do not believe it poses any health risks, the company has also pledged to reduce its levels in Coke sold in Britain and the rest of the world, although it hasn't given a timescale. Pepsi, meanwhile, has reduced the chemical in its American formula, but refused to change it anywhere else — meaning if the Californian health officials are right, the Pepsi sold in Britain and most of the rest of the world is potentially more carcinogenic than the stuff swigged in America.

Coca-Cola and Pepsi this week insisted that all of their beverages are completely safe, with Coca-Cola claiming it made the change in the U.S. only in response to a 'scientifically unfounded' food law in California.

In a statement yesterday, Coca-Cola Great Britain said: 'Coca-Cola has an uncompromising commitment to product safety and quality. All of the ingredients in our products are safe.'

But the changes to the recipes have raised the inevitable question: just how safe are the ingredients that go into every can of cola? And what does that brown stuff really do to our insides?



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**PS.**

And just because you drink sugar-free, diet cola, don't think you're off the hook. For there is a growing body of research which suggests that low-calorie and sugar-free drinks are bad for us, too.

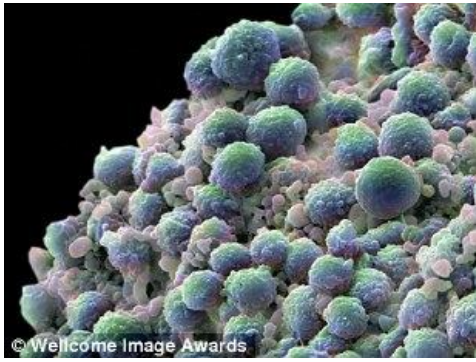
Studies have shown that people who have at least one low-calorie fizzy drink a day are at greater risk of obesity and type 2 diabetes.

And some experts also believe that sugar-free drinks confuse the brain, leaving it unable to distinguish between sweeteners, such as aspartame and saccharine, and regular sugar.

In that case, a person may be tricked into overeating, as the brain can no longer calculate the body's calorific intake.

So while diet colas may make you feel virtuous, they could be doing you more harm than good.

## **COLOURING LINKED TO CANCER**



Cola's colour comes in part from 4-methylimidazole (4-MI), a chemical that forms in the production of caramel food colouring.

Coca-Cola, Pepsi and other manufacturers insist it is safe at the low doses found in drinks.

But in California they disagree. After studies showed that long-term exposure to the chemical causes lung cancer in rats, health officials ruled that products with more than 29mcg must carry a health warning.

And when research by the Centre for Science in the Public Interest, a campaign group, found cans contained nearly 140mcg, all cola companies across the U.S. were forced to cut levels.

Food campaigners say daily consumption of 4-MI at 30mcg would cause cancer (pictured) in one in 100,000 people over their lifetimes.

The U.S. Food and Drug Administration says that someone would need to drink more than 1,000 cans of cola every day to reach the levels that caused cancer in lab rats.

And the British Food Standards Agency agrees. It says the chemical is 'not a food safety concern'.

## CAFFEINE



A can of cola contains 40mg of caffeine — half the caffeine in a mug of tea and a third of the amount in a mug of filter coffee (pictured).

Caffeine is a stimulant that works on the central nervous system. It can trigger a dramatic, short-lived increase in blood pressure and increases the heart rate.

But there is little evidence that it causes long-term high blood pressure, or that it is bad for healthy hearts. Many regular coffee or cola drinkers simply develop a tolerance to the stimulant.

In the UK, pregnant women are advised to have less than 200mg a day. Those with high blood pressure are also warned to steer away from coffee, tea and cola drinks.

Caffeine can also stop the body from absorbing iron from food — so people with a big cola habit may be at greater risk of iron deficiency.



## SUGAR



Doctors are in no doubt — the biggest danger from cola doesn't come from the hidden additives, flavourings or colourings, but from sugar.

Too much sugar leads to obesity, the major cause of cancer in the western world.

It also increases the risk of type 2 diabetes, causes heart disease and increases the risk of stroke.

The over-consumption of sugar (pictured) has been linked to depression, poor memory formation and learning disorders in animal experiments. And it rots teeth.

Each regular can of cola contains eight teaspoons of sugar. When you drink that much sugar so quickly, the body experiences an intense sugar rush.

The cane and beet sugar used in Coca-Cola is used up quickly by the body, which soon experiences a rapid drop in energy, leading to cravings for more sugar.

## PHOSPHORIC ACID



Phosphoric acid is a clear, odourless chemical that gives cola its tangy flavour and helps cut through the sickly sweetness of all that sugar.

It is also an effective rust remover — the reason that a glass of Coke can restore the lustre to coins and old metal.

But it can also disrupt our bodies.

Research at the U.S. National Institutes of Health in Maryland found that drinking two or more colas a day doubled the risk of kidney stones (pictured) — and the phosphoric acid in it was blamed.

Another U.S. study found that women who regularly drink cola — three or more times a day — had a four per cent lower bone mineral density in their hips than women who didn't drink cola.

Again, phosphoric acid is thought to be the cause. No one is entirely sure why it leads to weaker bones, although some researchers argue it prevents calcium from food being used to renew bones.

## GENDER-BENDING CHEMICAL



The 'gender bending' chemical BPA, or bisphenol A, has been linked to heart disease, cancer and birth defects.

It is found in baby bottles, plastic forks, CD cases and in the lining of aluminium fizzy drinks cans, including those of Coca-Cola.

Because it mimics the female sex hormone oestrogen, and thus disrupts the natural balance of the body, some believe it could be dangerous — particularly to fetuses (pictured).

Some animal studies have indicated it is safe. Others have linked BPA to breast cancer, liver damage, obesity, diabetes and fertility problems.

Despite the uncertainty, it has been banned in baby bottles across the European Union and in Canada in case it leaches from plastic into formula milk or juice drinks.

The Food Standards Agency in the UK says it is safe in food packaging and poses no risk in fizzy drinks.

## CITRIC ACID



Citric acid gives lemons (pictured), oranges and grapefruit their kick and cola its bite, helping to make the drink nearly as corrosive as battery acid when it comes to teeth.

Prolonged exposure to cola and other fizzy drinks strips tooth enamel causing pain, ugly smiles and — in extreme cases — turning teeth to stumps.

A study in the journal *General Dentistry* found that cola is ten times as corrosive as fruit juices in the first three minutes of drinking.

The researchers took slices of freshly extracted teeth and immersed them in 20 soft drinks. Teeth dunked for 48 hours in cola and lemonade lost more than five per cent of their weight.

A study in the *British Dental Journal* found that just one can of fizzy drink a day increased the risk of tooth erosion. While four cans increased the erosion risk by 252 per cent.