



## Formula for the perfect brew

*Voiced by Materials scientist Mark Miodownik.*

Everyone's got their own ideas about how to make the perfect cup of tea. But there are some rules, based on the chemistry of tea-making.

Using this state-of-the-art machine, I'll show you how to transform your daily brew in four easy steps.

Number one. Use loose leaf tea.

When you add hot water to loose tea leaves, convection currents swirl them around, allowing the fragrant flavours to diffuse.

But, if those leaves are tightly packed into a teabag well they can't move freely. And some of the flavours that dissolve from the leaves won't make it into the water.

Using loose leaves means you know you're giving your tea the best chance to release its flavours.

But if you love the convenience of a tea bag, make sure it has lots of space inside.

Number two. Use soft or filtered water.

That horrible waxy layer that sometimes floats on top of your tea is technically called 'tea scum'. And the culprit is hard water.

Hard water contains much more calcium than soft water and this binds to the plant extracts in the tea leaves to form scum.

So if you live in a hard water area, make sure you filter your water before putting the kettle on.

Number three. Boil water for black tea – but not for green.

Black tea and green tea are both made from the same plant. What makes them different are the ways the leaves are processed.

Black tea leaves are crushed so the chemicals inside them get exposed to the air – a process called oxidation. This alters the bitter-tasting compounds, such as tannins, into more floral and fruity flavours that we love.

The tea leaves that become green teas remain more intact and so less of the tannins get oxidised.

Tannins dissolve in water at 80°C. This means that the temperature of the water will affect the taste of your tea. Black tea needs boiling water to bring out its characteristic flavours.

But for green tea, you want to use water at a much lower temperature – ideally below 80°C – to prevent your drink from becoming too bitter.

Number four. Be patient and let it brew.

The evidence on brewing time varies. But researchers are sure of one thing... Brits just don't let their tea brew for long enough.

There are more than 30,000 chemicals in tea – all of which need time to emerge. So, while most people wait for well under two minutes, studies show we should be brewing for at least two and even up to eight minutes.

We're ready.

Adding milk or sugar comes down to personal preference. But if you've followed my top tips, you'll be able to enjoy tea black without any bitterness.

*Archive video: Getty Images.*