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LIGHT STRIKE

The wine fault that
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blinded by the

LIGHT

There's an everyday threat to wine that's more insidious than you ever imagined. Don't go towards the light, says **Clinton Carwood**

It's all around us... The silent killer. It's probably surrounding you right now, ready to mercilessly attack your wine and render it undrinkable, or at least considerably less drinkable than it was when it left the winery.

It's not TCA (where are you reading this surrounded by cork taint?), nor even Brettanomyces – some people are into that in their wine, after all. No, the environmental variable causing the damage to your wine that's most difficult to avoid is light, as it leads to lightstrike (which just also happens to be the best name ever for a wine fault).

So what does a light-struck wine smell like? How quickly does it ruin a bottle? And what's the best way to avoid it?

Some experiments were clearly needed to find out the answers. But first, we turned to Geoff Taylor at Campden BRI, where they know about this kind of thing.

'Light, in particular UV light, damages molecules such that aromas/flavours can be changed or modified, and the wine typically loses its fresh fruit characteristics,' Taylor explained. 'In general, a light-struck wine has less aroma and flavour, and occasionally lightstrike can produce some unpleasant

**'PARALLELS CAN BE DRAWN
BETWEEN LIGHTSTRIKE IN WINE
AND THE DAMAGE SUNLIGHT
CAUSES TO SKIN' GEOFF TAYLOR**

characteristics in the wine. Light-struck character can also occasionally manifest itself in a similar way to a reductive character. Parallels can be drawn to the damage sunlight causes to skin.'

What's the vinous equivalent of sunscreen, in that case? 'The darker the glass, the better the wine is protected from lightstrike. Brown glass is

HOW IT WORKED

In order to determine whether light was indeed a danger to wine, how fast the effect became noticeable, and to what extent, we called in an at-risk style of wine – entry-level rosé – bottled in both clear/flint and green glass.

Bottles of each type of glass were placed in full daylight on a fourth-floor windowsill, while other bottles were kept under artificial light. Control samples were kept in the dark.

Tastings were strictly blind – panellists had no way of identifying the origin of each sample.

Panellists were asked to describe each wine, and to identify the best and worst among them.



particularly effective but is now rarely used for bottling wine,' added Taylor.

And to take this sunburn analogy even further, are some wines, like some people, more susceptible to sunlight than others? 'Light, aromatic, white wine and rosé wine that has been bottled in white flint glass [clear colourless glass] are the most fragile and susceptible to lightstrike. It takes longer to damage red wines.'

Scary stuff. It was time to don our lab coats and ruin some wines in the name of science. PLB (now the Bibendum PLB Group) kindly supplied us with a few cases of typically at-risk wine – entry-level South African rosé specially bottled for us in both clear and green glass. We then enlisted help from Hakkasan's Christine Parkinson and Rebecca Coates, as well as Drinkonomics' Christopher Cooper.

A sunny spot on a fourth floor windowsill was identified at the Hakkasan offices, as well as a fluorescent-lit area in their kitchen, and we were good to go.

As this kind of experiment had the potential to be particularly susceptible to personal bias, tastings were conducted on a strictly blind basis. Sample bottles were assigned random numbers, and then bagged and assigned a second number when it came time for each tasting. Tasters described each sample, and identified the best and worst examples on each occasion.

AFTER ONE DAY

We'd heard mixed reports about the amount of time it takes for lightstrike to rear its monstrous head. But after just one short day in weak London winter sunshine, we were rather assuming that our first test would be nothing more than a tasting of five samples of the same rosé wine, untainted.

And yet the first thing our panel spotted was that no two samples were the same. 'There's definitely variation here,' said Parkinson. 'They're not consistent.'

Even more amazing, once everyone had finished tasting, was the reveal. The two bottles kept in sunlight were unanimously identified as the worst samples. Tasters called them dull, earthy, stinky and vegetal, describing cooking cabbage, tomato jam, and a metallic note.

The next-worst pair were the clear

A LIGHTSTRIKE FAQ

What is it?

Lightstrike describes a wine negatively affected by exposure to light.

What light causes it?

Both sunlight and artificial light. Ultraviolet, violet and blue light cause the most chemical change.

What happens to the wine?

Diminished aroma and flavour is the most common symptom, but off-flavours can also emerge. These can include cabbage, wet wool and onion, and can also take the form of oxidative or reductive characters. The chemistry behind this is complicated.

Go on.

OK, you asked for it. One of the main chemical villains here is 3-methyl-2-butene-1-thiol. Beer geeks know it too, where it's a major culprit in light-struck (or skunked, as they like to call it) beers. It's the stinky one, and it's apparently caused by light-excited riboflavin reacting with amino acids to create sulphur compounds and the 3-methyl-etc guy mentioned before. But there's more....

That's enough, thanks. How can we stop this travesty of chemistry from happening to our precious wine?

Stop the light. UV light, blue light... all the light. Glass bottle colour helps (brown way more than any other), but even then the protection isn't complete. Storage away from light is the only way to fully protect wine from lightstrike. That or black bottles. Or cans.

But consumers won't buy rosé if they can't see its pretty pink colour.

Sorry, buy that's a conundrum we've yet to solve...



and green bottles kept in artificial light. Stewed red fruit, overripe berries, subdued floral notes and a distinct earthiness characterised these two.

Finally, without fail, the sample kept completely in the dark was consistently identified as the best of the bunch. This lightstrike thing really exists, it seems.

The results were emerging in pairs, with little difference between the clear and

aren't sold as much as others – just gathering sunlight,' he mused.

What to do? 'No daylight, or black glass – those are the only options,' said Parkinson. There's a reason, it seems, that wine is traditionally kept in cool, dark cellars.

AFTER ONE WEEK

Seven days mostly amplified the effects that we'd seen after one day, as our panel studiously sniffed their way through a sequence of spoiled rosés. Their notes on each wine only confirmed those of the week before.

If anything, they were a little less forgiving. 'Chemical, earthy, nasty and one-dimensional,'

was one summary of a bottle that had been living on a windowsill for a week. Sulphur, stewed cabbage, stagnant water and composting vegetable skins featured in other tasting notes.

The artificial light bottles were closer in flavour to where the sunlight bottles had

'THE WINE GETS RUINED, AND THEN IT'S JUST RUINED. IT'S CLEARLY NOT A GRADUAL PROCESS' REBECCA COATES

green glass. Coates had a theory. 'This is quite a light green glass,' she said. 'They probably would have been better in brown, but this colour's better looking.'

Cooper was already thinking about the bigger issues. 'This begs the question about those wines in pubs or bars that

been before – with flat, dull, burnt fruit, boiled sweets, barley sugar and a slight cardboard note.

Again, the control bottle revealed itself rather easily, with clearly-identifiable fruit, particularly on the palate.

So lightstrike is certainly real, but whose fault is it?

'It affects every part of the supply chain,' explained Coates. 'Winemakers know about it, but this is a consumer-led issue. Consumers won't buy rosé in brown bottles.'

This was precisely the reason for choosing to use rosé for these experiments. Many white wines are protected behind dark glass, but rosé wines can't receive this benefit, because consumers buy rosé with their eyes.

So a consumer change is what's needed? Maybe if the big guys got involved... 'If Tesco can choose to run its tastings on fruit days [the best days for tasting wine according to biodynamics], then it can decide not to sell any of its rosé in clear glass,' said Parkinson.

'Wow, I'm looking forward to trying these in a month's time,' added Coates, with a certain degree of irony.

AFTER ONE MONTH

And so it was with no small amount of trepidation that our panel gathered at Hakkasan's London head office in December. If just one week had wreaked that kind of havoc with these rosés, what would be awaiting us after a month?

No longer a surprise, tasters were more or less unanimous in identifying the two sunlight samples as the two worst, and the control sample as the best. What was a surprise, however, was the lack of significant change in the light-exposed samples. 'This is still a lot like it was three or four weeks ago,' said Parkinson.

Tasting sheets showed similar notes from before for the two in sunlight: earthy, oniony, dirty, decomposing vegetables, pond water, cardboard, etc. 'Pretty rosey!' summed it up.

But they weren't progressively worse compared to the previous tasting. 'The wine gets ruined, and then it's just ruined. It's clearly not a gradual process,' speculated Coates.

Taylor over at Campden BRI confirmed this: 'Once the pleasant aroma/flavour

molecules in wine are damaged, at best what you have left is neutrality. It's quite difficult to damage neutrality!'

The bottles stored in artificial light, incidentally, had continued their gradual decline, losing more fruit and developing some struck match and dusty aromas.

IN THE GLASS

Having established that bottles of wine are definitely ruined by exposure to light, an additional real-world question emerged. How long would it take a well-kept wine to become light-struck after it was served?

Would all that careful storage be for nothing once a punter wandered out into a beer garden on a summer's day?

'This is maybe the most important experiment of all,' said Parkinson – and it proved to be an interesting one too.

Glasses of rosé were poured and exposed to sunlight for half an hour, two hours and four hours. These were then tasted blind, along with a control.

Results were rather less predictable this time, but it was nevertheless significant that no two wines bore the same tasting note. 'There's definitely a change,' said Coates after tasting all four samples.

The control sample showed the most fruit, although some spotted a little reduction, leading them to incorrectly

suspect a little light damage. After half an hour, almost no degradation was identifiable, and most thought this was fine, if a little muted.

The two-hour sample was most tasters' worst wine, with all the lightstrike hallmarks: subdued, muted, earthy and dirty, with that same pond water note starting to emerge. And yet at the four-hour mark these off-notes weren't as noticeable. That said, this was hardly the best sample either.

These results may have been less conclusive, but they nevertheless showed that there's an identifiable change at work here, even over a short period of time.

'This is most definitely a problem if you've got a rooftop bar, for example,' concluded Parkinson.

'Even if you're just setting up at 9am, knowing you'll be busy at 1pm, that's a whole lot of lightstrike happening inbetween,' added Cooper.

'Maybe we need outdoor ice buckets that protect the wine,' mused Parkinson. 'I wonder how long it'll be until someone starts making covers or umbrellas for wine bottles.'

Many thanks to PLB (now the Bibendum PLB Group) for supplying the wines for these experiments, and to the Hakkasan team for their help throughout.

PANEL COMMENTS

CLINTON CAWOOD, *IMBIBE*

'It's clear that wine is irrevocably damaged by even a little exposure to light. Even worse, though, is that many light-struck wines are probably just thought to be of inferior quality. Lightstrike can be introduced at any stage in the wine trade, and it's time that every link in that chain starts doing what it can to eliminate the problem.'

REBECCA COATES, *HAKKASAN*

'I think that a lot of what we blame on corks or oxidative character could be as much the fault of sunlight. And it was interesting to conduct these experiments on rosé – more has been done on the effect of light on white and red wine.'

CHRISTOPHER COOPER, *DRINKONOMICS*

'In the course of these tastings, I was walking past shops and pubs and bars with street frontage, noticing all the wines they keep in their windows... I was also thinking, if these were the results we were getting in the middle of winter, how much more would they be affected in summer?'

CHRISTINE PARKINSON, *HAKKASAN*

'Lightstrike is the great ignored wine fault. If only the trade paid as much attention to the effect of light as they did other faults. We're all experts in faults that someone else has caused, and not in faults that we can cause ourselves.'

