

# Behind the headlines

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Your guide to the science that makes the news

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## Metal in wine

Dangerous levels of metals in wine pose serious health risks, newspapers allege today.

Metals in your daily glass of wine have been linked to cancer and Parkinson's, according to the *Daily Mail* headline. *The Guardian* said the research questioned the 'health benefits' of wine, while *The Times* talked about the dangers 'lurking' in a glass of red.



But these findings are not enough to point to specific risks of drinking wine, and do not give enough information to decide to buy one wine rather another.

The links to cancer and Parkinson's are indirect: they are assumed from previous research, and were not looked at in the current study.

The research was based on someone drinking a third of a bottle of wine a day from the age of 18 onwards, so probably does not reflect the consumption patterns of most people.

And the way the researchers added together hazards from different metals to produce a final score for individual wines may not be particularly meaningful. It would need to be shown to be correct in future research.

The suggestion for health warning labels on wine would be an extreme response to research that raises interesting questions, but gives few solid answers.

This study reported a "measure of the level of concern" for to buy wine from on the basis of metal content.

### Where did the story come from?

Professor Declan Naughton and Andrea Petróczi from the School of Life Sciences, Kingston University in Surrey, carried out this research. No funding source is acknowledged, and the authors declare that they have no competing interests. The study was published in *Chemistry Central Journal*, a [peer-reviewed](#) science journal.

### What kind of scientific study was this?

This was a [secondary analysis](#) of data from a previous [laboratory study](#). The aim was to estimate potential health risks in table wine. This study used previously results of levels of metals ions in several different table wines. researchers looked for seven metals: lead, chromium, copper, zinc, nickel, manganese and vanadium.

The researchers looked at a 2007 study that had reported the metal ion content of wines from 16 European or South American countries.

The researchers of the current study used this data to estimate the risks to health for each wine. This score took into account the concentration of the metal found in the wine, and required assumptions to be made of how much metal is absorbed in the body, the number of days per year, and the number of years that wine is

drunk. Adjustments were made for body weight and the safe limit for each metal.

To ensure that the effect of metal ion was not underestimated, the researchers assumed that 250mls of wine (about a third of a bottle) was drunk every day for life, from age 18 to 72 years (for men) and to 85 years (for women).

The researchers used each metal's upper safe limit to calculate the potential health risk of each metal. The risk was calculated for each of the seven metal ions, then combined to give a summary measure for each wine from the 16 countries.

What were the results of the study?

The researchers say that the risk values based on an assumption of drinking for life were "frequently of high concern". Apart from the wines selected from Italy, Brazil and Argentina, all other wines had values indicating an increased level of risk.

The researchers also looked at the levels of certain metals in these wines and found that the levels of vanadium, copper and manganese had the highest impact on these the risk.

What interpretations did the researchers draw from these results?

The risk values calculated are concerning in that they mainly exceed the safe level. The researchers do caution that in the absence of upper safe limits, risk values cannot be calculated for most metal ions. They also suggest that further unaccountable risks are associated with drinking these wines.

What does the NHS Knowledge Service make of this study?

Although this laboratory study found that levels of metals in wine are at levels to cause concern, caution should be used in its interpretation. It is too soon to draw any conclusions about the importance of metals found in wine.

- The values determined in this study were calculated using the assumption that 250mls of wine is drunk every day from age 18 for the rest of a person's life. This may not be a reasonable assumption for everyone, and the researchers acknowledge this model is designed to avoid underestimation of the risk.
- The metal content of the range of wine was gathered from other research, but was not verified in this study. It is not possible to be sure how accurate or precise the measurements of metal content were in these previous studies.
- The way that the selected metals' values were added together for each wine may not be valid if the risks for each component have not been precisely identified first.
- The hazards of some metals, for example lead, are well-known. However, many other metals have not had their biological effects systematically investigated, and therefore the effect of sustained ingestion is not known.

The authors call for further research in the interests of public health, to determine the mechanisms of metal inclusion/retention during wine production. They say that these studies should include the influence of grape variety, soil type, geographical region, insecticides, containment vessels and seasonal variations. It seems sensible to wait for such studies before putting warning labels on wine as these researchers suggest.

### *[Links to the headlines](#)*

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[The metals in your daily glass of wine that have been linked to cancer and Parkinson's](#). The Daily Mail, October 30 2008

[Researchers question health benefits after metal found in wines](#). The Guardian, October 30 2008

[Danger lurking in your bottle of red](#). The Times, October 30 2008

### *[Links to the science](#)*

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Hague T, Petroczi A, Andrews PLR et al. [Determination of metal ion content of beverages and estimation of target hazard quotients: a comparative study](#). Chem Cent J 2008; Jun 25

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