Extending the shelf life of commercial canned wines through manipulation of transition metals content

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Summary

- Commercial canned wines commonly display reductive characters from hydrogen sulfide (H₂S; ‘rotten egg’) and methanethiol (MeSH; ‘cooked vegetable’), often within 3-6 months.
- Transition metals, such as copper (Cu), can speed up the formation of these stinky aromas, especially in a low oxygen environment.
- Aluminium (Al), released from the can interior during storage, may also affect sulfide formation.

Finding a practical solution to the problem

- Copper is often found bound to sulfides in commercial wines.
- Cross-linked polymers (CLPs) can be used to lower copper concentration.
- This could result in lower levels of residual sulfides in the wines.

Testing the theory with bench-scale trials

- Addition of aluminium (metal) to wine elevates H₂S levels within four weeks.
- Impact of aluminium on H₂S formation appears to be less when pH is higher, oxygen (TPO) is higher and SO₂ is lower.
- Resulting H₂S levels are lower when copper is removed using CLP treatment, even when aluminium (metal) is present.
- Minimal impact is seen on MeSH levels following the CLP treatment in this environment.

Future work

- Confirm impact of lowering copper concentrations in a range of wine matrices
- Evaluate extent of impact when oxygen and SO₂ content are varied

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