

Understanding the development of reductive compounds in commercial canned wines



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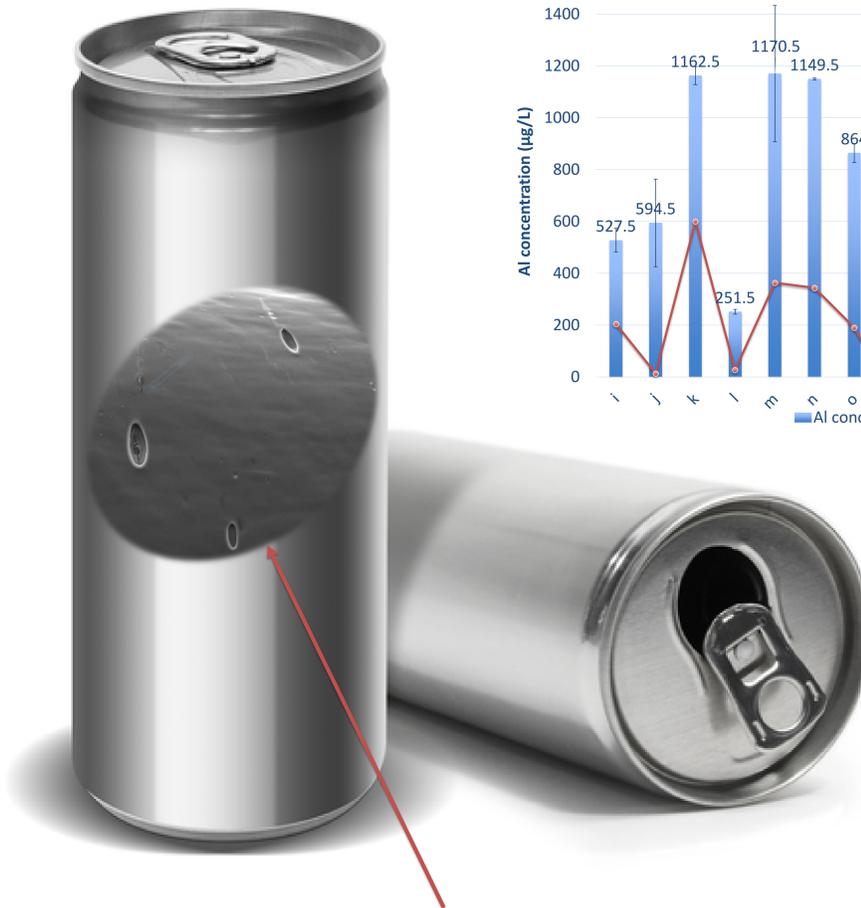
Summary

- ❑ 'Wine in a can' is a fast-growing product category internationally.
- ❑ Commercial wines in cans often display reductive characters (e.g. 'rotten egg', 'cooked vegetable' aromas).
- ❑ Many canned wines have a limited shelf life because of this issue.

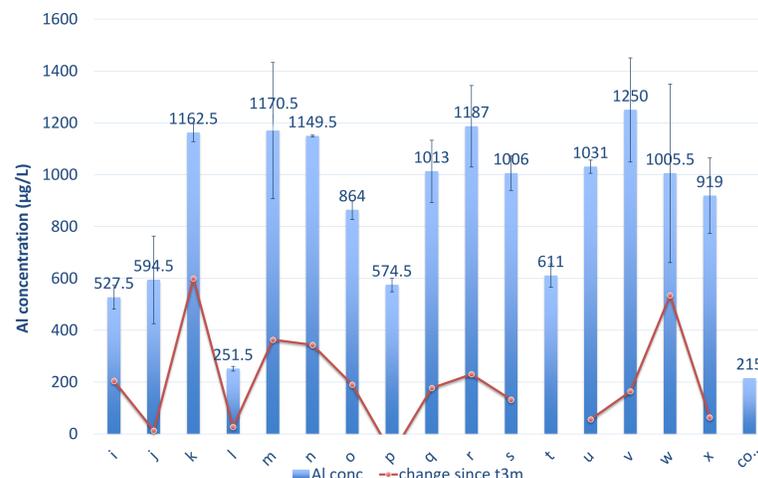
A consortium-based approach

An AWRI-led consortium study is developing practical solutions to the shelf life problem through:

- ❑ monitoring the development of commercial canned wines
- ❑ targeted bench-scale studies to gain a better understanding of the reduction chemistry
- ❑ trialling remediation strategies to improve wine shelf life.



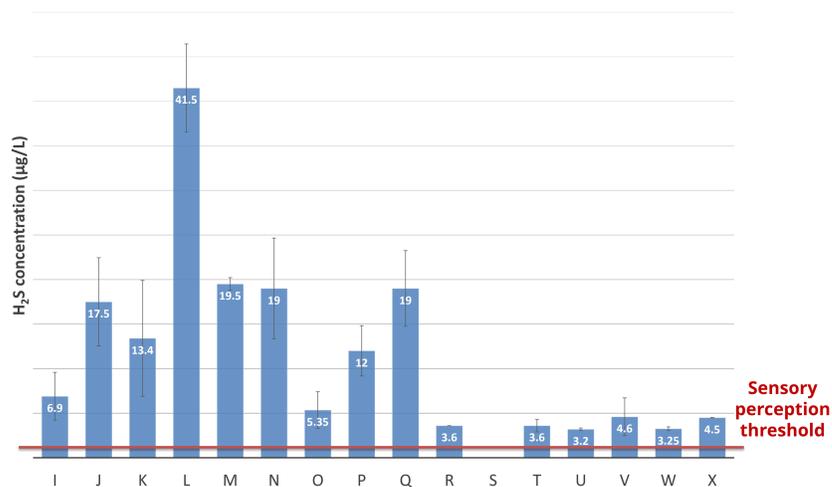
Evidence of pitting in the aluminium can interior surface



Aluminium concentration in can after five months, red line showing the increase in the last two months

Monitoring commercial canned wines

- ❑ Benchmarking study includes 16 commercial canned wine products.
- ❑ Formation of hydrogen sulfide (H₂S, 'rotten egg') increases post-packaging.
- ❑ Aluminium concentration increases during storage in can, providing a chemical pathway for H₂S formation that does not exist in wines packaged in glass.



H₂S concentration in 16 different canned wine products after shelf life of five months

Targeted bench-scale studies

- ❑ Addition of aluminium metal elevates H₂S levels in commercially produced wines.
- ❑ Impact of aluminium on H₂S formation appears to be less when pH is higher, oxygen is higher and SO₂ is lower.
- ❑ Copper appears to play a significant role in the reduction chemistry.

Remediation strategies for improved shelf-life

- ❑ Cross-linked polymers can be used to lower the copper concentration in commercial wines.
- ❑ Resulting H₂S levels are lower when copper is removed, **even with aluminium present.**

Future work

- ❑ Investigate the relationships between copper, aluminium and H₂S levels.
- ❑ Trial the impact of cross-linked polymer treatment on a series of commercial wines.
- ❑ Understand the impact of remediation strategies on sensory attributes (aroma and palate).

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Food Innovation Australia Limited (FIAL) is an industry-led, not-for-profit focused on growing the share of Australian food in the global marketplace.

