Protein stabilisation of white wines using natural zeolites

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BACKGROUND

- The use of bentonite fining in the global wine industry causes losses in the range of US$1 billion per year ($100M per year for Australia).
- Bentonite treatment is effective but has disadvantages:
  - loss of ~3 – 17% wine volume as lees
  - handling and waste disposal
  - environmental concerns
  - lack of specificity for protein.

AIMS

Develop an economically and technically feasible alternative to bentonite for removing haze proteins from wine.

RESULTS

- Thaumatin-like proteins (TLPs) and chitinases (CHI) before and after treatment with zeolite
- Effect of zeolite dose on protein concentration
- Semillon wine was fully stabilised by applying 4 g/L of zeolite, whereas Sauvignon Blanc and Chardonnay required 6 g/L dosage of zeolite.
- Compared to bentonites, zeolites cause much less wine loss, due to more compact lees, and they can be potentially reused as soil amendments in agriculture.
- The concentration of potassium in the wines decreased by more than 30% following treatment with natural zeolite. In contrast, the bentonite treatment did not result in any notable change in potassium levels.

TAKE-HOME MESSAGE

Natural zeolites can offer winemakers an alternative to the commonly used bentonite for haze protein removal from white wines.