

SCIENCE NEWS

This Week

Wine Tasting

Instrument can sniff out vinegar in sealed wine

It's an unpleasant surprise when newly opened wine tastes like vinegar. It's particularly distasteful if you spent thousands of dollars on it.

Now, chemist Matthew Augustine of the University of California, Davis claims he can tell buyers or sellers of wine when a bottle's gone to vinegar. Bacteria or yeast can make acetic acid, alias vinegar, from ethanol using oxygen that has seeped through a defective cork.

Augustine and graduate student April Weekley devised an apparatus that holds an entire bottle of corked wine inside a nuclear magnetic resonance machine. Most laboratory NMR machines are used to determine the chemical constituents in a small tube of liquid.

With their adapted instrument, the researchers could detect acetic acid's chemical signature in sealed bottles even at concentrations below the official limit at which vinegar spoils wine and when the corks appeared normal, Augustine says.

UC Davis and the researchers just filed a patent on the technique.

Augustine suggests that a company specializing in wine analysis might use such a machine to examine expensive bottles put up for auction. The system might also indicate whether wine in a sealed bottle found, say, in a shipwreck, is any good.

This type of analysis would have limited use, says Thomas Henick-Kling of Cornell University and the New York State Wine Analytical Laboratory in Geneva. Most wines are analyzed before they go into a bottle, and those that are properly made and stored rarely spoil by way of vinegar. If the Davis researchers could use their NMR to measure corky off-flavor—a more widespread spoilage problem—then the system might find more use, Henick-Kling says.

Richard Brierley, head of wine sales for Christie's in North America, remains skeptical that Augustine's vinegar analysis could add to the auction house's own evaluation of wines, which can sell for tens of thousands of dollars per case. Christie's specialists physically inspect such wines for signs of discoloration, evaporation, and cork seepage. They also investigate the wines' origins and how they've been stored, and sometimes the examiners even sample one bottle in a collection, Brierley says.

In the end, Brierley says, "there's an inherent excitement and subjectivity and something of a risk in buying old wines because you never know what you're going to get." —J. GORMAN



WINE AWAITS A wine bottle ready for NMR analysis.