Waters
Lab Highlights
An Internal Communication of Applications and Techniques
ORGANIC ACIDS
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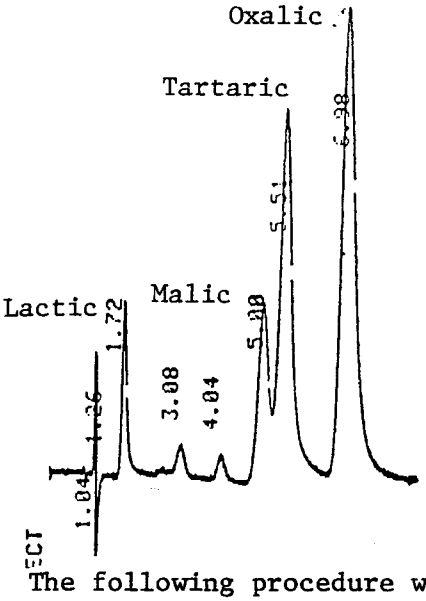
ORGANIC ACIDS IN WINES USING RCSS AND SEP PAK

Naturally occurring organic acids found in grapes and other fruits have long been the object of intensive research in the wine and beverage industries. In the analysis of wines very often the type of grape can be pinpointed from its characteristic acid pattern and, in many instances, even the geographical source can be determined. Additionally, the fermentation and aging process can be monitored conveniently by following the production of various organic acids.

In the past, ion exchange chromatography at elevated temperatures (60°C) has been employed, but often these methods are long and do not have the flexibility of reverse phase HPLC. The chromatogram (Figure 1) shows a rapid standards analysis of some of the major organic acids found in wines. An actual wine sample cleanup with Sep Pak is shown in the chromatograms on the reverse side.



Column:	Radial PAK C_{18} (5mm x 10cm, 5µ)
Solvent:	10% CH_3CN/90% (0.5 gm, $(NH_4)_2PO_4$ + 2 mls n-octylamine to a liter water), adjust to pH = 7.0 with H_3PO_4
Flow Rate:	4 ml/min.
Detector:	M450, 210 nm
Sample Size:	10 µl

The following procedure was used to clean up the early eluting interferences from a red wine.

1. Pipette 2 mls of wine sample.
2. Dilute to 8 mls with $(NH_4)_2PO_4$ buffer pH 8.0 (add internal standard).
3. Prepare Sep Pak C_{18} by wetting with CH_3CN and flushing with H_2O.
4. Pass 8 mls of diluted sample through Sep Pak C_{18}. Collect eluent.
5. Wash Sep Pak C_{18} with 2 mls of $(NH_4)_2PO_4$ buffer pH 8.0. Combine eluents.
6. Prepare DEAE cellulose by wetting $(NH_4)_2PO_4$ buffer pH 8.0.
7. Pass the 10 mls of Sep Pak eluent through DEAE.
8. Wash DEAE with CH_3CN/H_2O 20/80.
9. Elute acids off DEAE with 4 mls of H_2SO_4 pH 0.4. Collect eluent.
10. Inject 10 µl of this solution.

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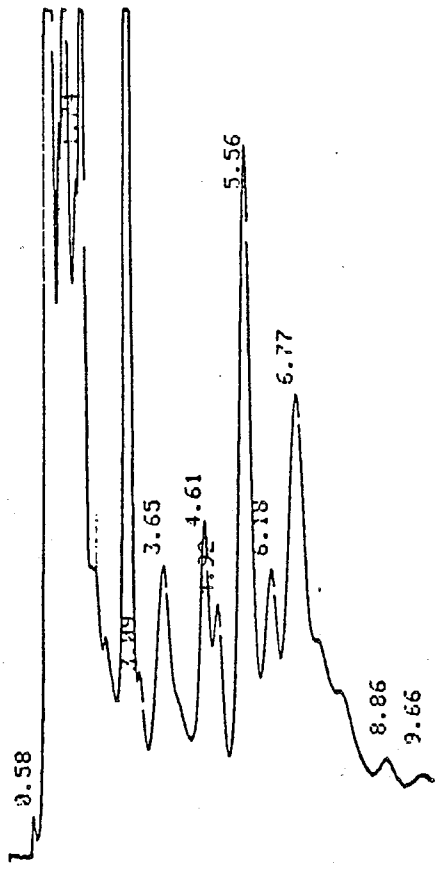
Neat Red Wine

NO Sample Preparation



Prepared Red Wine Sample

Two Step Cleanup