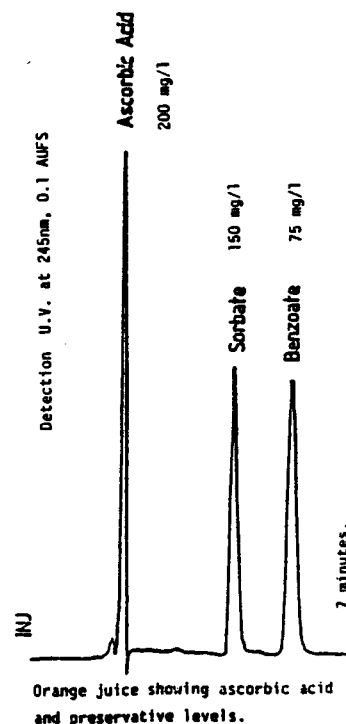
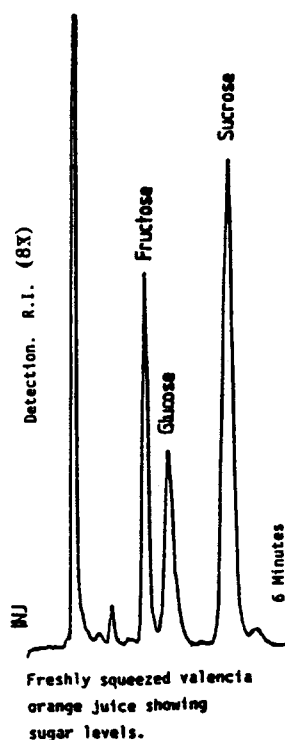
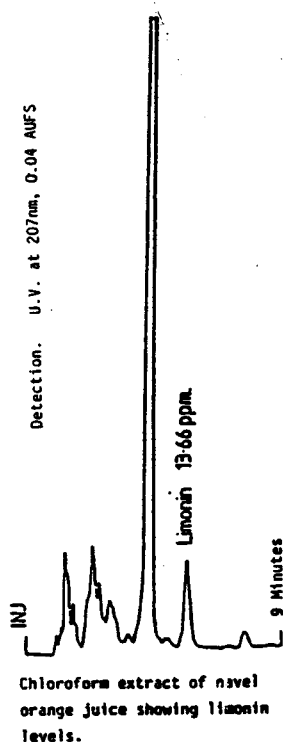


ANALYSIS FOR ADDITIVES AND PRESERVATIVES IN ORANGE JUICE

In the citrus industry quality control is important not only for monitoring additives, but also for determining the levels of naturally occurring compounds such as sugars and flavonoids.

Recently the Australian laboratories have developed an improved cleanup method for sugars and limonin, a naturally occurring substance responsible for bitterness in oranges, grapefruits and other citrus products. The chromatograms and conditions are shown below as well as a scheme for sample preparation.

	(a)	(b)	(c)
Column:	μ Bondapak TM CN	Carbohydrate Analysis	μ Bondapak TM CN
Flow Rate:	2 ml/min	3 ml/min	2 ml/min
Detector:	M480, 207 nm	R401, 8X	M440, 245 nm
Mobile Phase:	CH ₃ CN/H ₂ O (30:70)	CH ₃ CN/H ₂ O (75:25)	2% Methanol/ Aqueous Acetic Acid (95:5)



Sample preparation method is shown on the reverse side.

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SAMPLE PREPARATION

For sugars, preservatives and organic acids filtration through a 0.45 aqueous Millex filter is recommended. The Millex is used rather than the Swinny type since it has a larger surface area and juices in general are very pulpy.

For limonin the sample preparation is as follows:

1. To 15ml of normal strength juice add 5ml of $(\text{NH}_4)_2 \text{SO}_4$, and 10ml of CHCl_3 .
2. Shake for 20 minutes in a wrist action shaker.
3. Centrifuge for 10 minutes at 250 rpm.
4. Decant 2ml of CHCl_3 layer and take to dryness under a stream of dry nitrogen.
5. Take up in 200 μ l of CH_3CN .
6. Inject 10 μ l.