

Senzytec2

to assess the ethanol content
in citrus fruits and orange juice

Ethanol in citrus fruits

Citrus fruits and orange juice naturally contain a low percentage of ethanol, which is produced by **fermentation** processes causing sugars to be converted into carbon dioxide and ethanol. Fermentation is carried out by yeasts which are naturally present on the orange/lemon peel.

Ethanol concentration increases together with the degree of fruit maturity, of which it represents a useful parameter, besides soluble solids/titratable acidity ratio. Furthermore, the amount of ethanol is highly influenced by post-harvest storing conditions, especially if under controlled atmosphere at low O₂ or high CO₂ percentages.



The system has been used to precisely quantify ethanol concentration in citrus fruits and in commercially available orange juices.

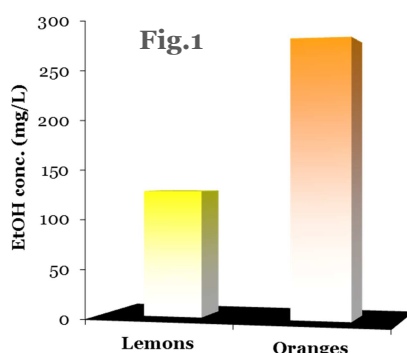


Fresh oranges and lemons

Lemon and orange samples were analyzed with **Senzytec2** to measure their ethanol content. Fruits were squeezed to get the juice, which was analyzed immediately with no pre-treatment.

Senzytec2 is an innovative biosensor based system able to detect different analytes in food matrices in a quick and reliable way

Results are shown in Figure 1.

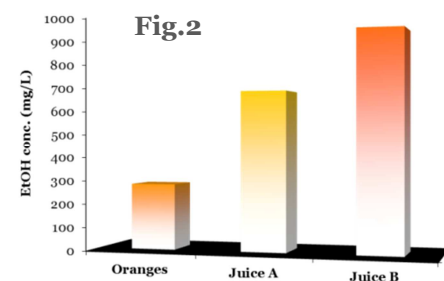


Fresh oranges vs orange juices

In addition to oranges and lemons, the ethanol content was measured in two different types of commercially available fresh orange juices: Juice A, 60% orange e 40% grapes, and Juice B, 100% orange.



Samples were centrifuged for two minutes, then diluted to fit within the measuring range of the instrument. Results are represented in Figure 2.



The mean values obtained (n=10) and their percentage errors are shown in the table below.

	Lemons	Oranges	JuiceA	JuiceB
mean (mg/L)	129	282	687	945
st. dev. %	2.5	4.2	3.6	4.7

Senzytec2 is an accurate, fast and economical system for the analysis of ethanol in citrus fruits.



Sample preparation is very easy (for fresh fruits no operation is required). The analysis procedure is straightforward, even for non technical staff.

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