

**SUBJECT: COMPARISON of CdR FoodLab instrument and NGD**

The purpose of this study is to compare the performance of the CdR FoodLab instrument to the NGD and ISO methodologies relative to the determination of soaps and of the number of peroxides and acidity on an oily matrix.

The reference methodologies are:

- NGD C8 – 1976 for the determination of soaps
- ISO 660: determination of acidity
- ISO 3960: determination of the number of peroxides

Samples of an oily matrix were tested and the test was carried out for each sample using both methods. In particular, the following was supplied: 2 samples for the determination of the number of peroxides (our Laboratory Code No.: 02A03871 and 02A03872), 4 samples for the determination of acidity (our Laboratory Code No. 02A03873 -02A03874 - 02A03875 - 02A03876) and 3 samples for the determination of soaps (our Laboratory Code No. 02A03877 -02A03878 - 02A03879).

The tests using the NGD and ISO methods were carried out on the oils heated to 50°C as per agreement, in order to improve repeatability.

## PEROXIDES

The determinations of the number of peroxides according to the ISO 3960 (ISO) method were carried out in real time with respect to the tests using the CdR FoodLab instrument. Some samples were obtained by mixing the two available samples in various proportions.

### Results according to ISO:

SAMPLE	RESULT
02A03871	070 eq. mole O <sub>2</sub> /Kg
Mix 1	1.01 eq. mole O <sub>2</sub> /Kg
Mix 2	2.52 eq. mole O <sub>2</sub> /Kg
Mix 3	2.09 eq. mole O <sub>2</sub> /Kg
02A03872	4.17 eq. mole O <sub>2</sub> /Kg

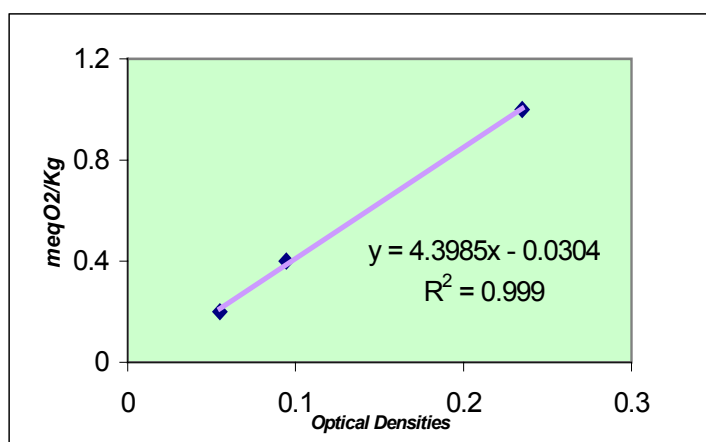
(Limit of measurability: 0.25 eq. mole O<sub>2</sub>/Kg)

### Instrument calibration:

CHANNEL 2: 25 μL of sample      Measurement range: 0 –2 eq. mole O<sub>2</sub>/Kg

Regression line:

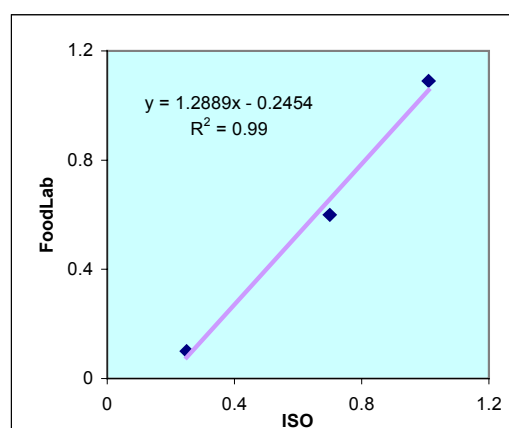
Optical density	eq. mole O <sub>2</sub> /Kg
0.055	0.2
0.095	0.4
0.235	1



### Calibration check and comparison of the two methods

The results obtained with the two methods are shown on the graph expressed in eq. mole O<sub>2</sub>/Kg, theoretical curve  $y=x$

Code	ISO	FoodLab
peanut oil	0.25	0.1
02A03871	0.7	0.6
MIX1	1.01	1.09

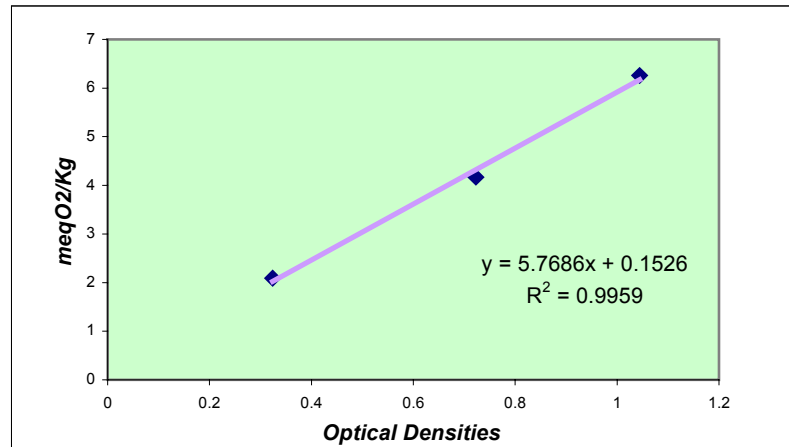


**Instrument calibration:**

CHANNEL 1: 10 µL of sample      Measurement range: 2 – 6 eq. mole O<sub>2</sub>/Kg

Regression line:

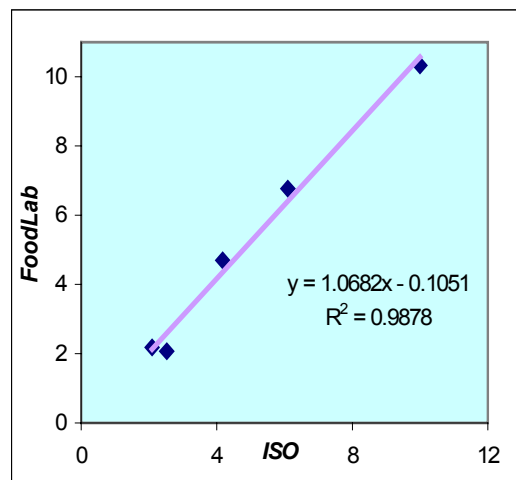
Optical density	eq. mole O <sub>2</sub> /Kg
0.324	2.09
0.723	4.17
1.044	6.26



**Calibration check and comparison of the two methods**

The results obtained with the two methods are shown on the graph expressed in eq. mole O<sub>2</sub>/Kg, theoretical curve  $y=x$

Code	ISO	FoodLab
Mix 3	2.09	2.18
02A03872	4.17	4.7
Mix 2	2.52	2.07
Sunflower seed oil 1	6.1	6.77
Sunflower seed oil 2	10	10.33



## ACIDITY

The determinations of acidity according to ISO 660 (ISO) were carried out in real time with respect to the tests with the CdR FoodLab instrument.

### Results according to ISO:

SAMPLE	RESULT
02A03873	0.16 g/100g oleic acid
02A03874	0.08 g/100g oleic acid
02a03875	1.48 g/100g oleic acid
02A03876	0.05 g/100g oleic acid
Lab. oil	2.22 g/100g oleic acid

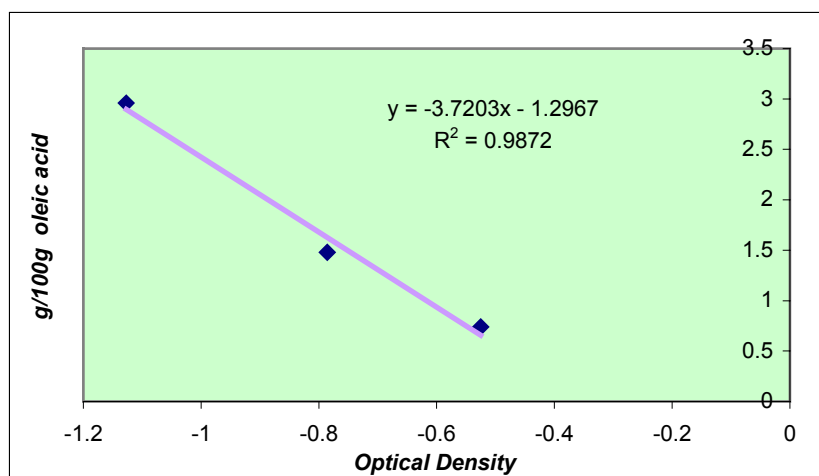
(Limit of measurability: 0.01 g/100g oleic acid):

### Instrument calibration:

CHANNEL 1: 1  $\mu$ L of sample      Measurement range: 0.5 – 3.5 g/100g of oleic acid

Regression line:

Optical density	g/100g oleic acid
-0.525	0.74
-0.786	1.48
-1.127	2.96



### Calibration check and comparison of the two methods

The results obtained with the two methods are shown on the graph expressed in g/100g oleic acid, theoretical curve  $y=x$

Code	ISO	FoodLab
White	0.00	0.00
02A03875	1.48	1.48
Lab. oil	2.22	2.41

