TRAINING CONFERENCE ON SPECTROSCOPIC TECHNIQUES IN SAFFRON

SAFFIC Project (COLL-CT-2006 - Contract Number 030195)

Date: Tuesday, 16th September 2008

Place: Krokos Kozanis

ATTENDANTS

Mr. Charalabos Kanakis	AUA
Mrs. Eirini Anastasaki	AUA
Mr. Panayiotis Bakatzounis	BAKATZOUNIS
Mr. Nikolaos Patsiouras	KROKOS
Mrs. Rita Gkola	KROKOS
Mrs. Eleni Kaliva	KROKOS
Mr. Efthimios Manolas	KROKOS
Mr. Charalabos Chatziaras	KROKOS

12:00 Mr. N. Patsiouras welcomes the attendants of the Training Conference.

12:05 Mrs. E. Anastasaki explains the main principles of spectrophotometry. She continues by exposing the spectrophotometer equipments used to determine the quality of saffron with the current ISO norm. She underlines that the modification on the ISO norm doesn't require any specific equipment, but only some laboratory equipment and material with an affordable cost for the small and medium enterprises.

12:45 Mr. Ch. Kanakis takes the word and introduces the new techniques for the quality determination of saffron.

As for the safranal determination, he underlines that it is an easy and quick method. The results of the new method have good correlation with the results carried out with GC technique, which is the most adequate technique for the determination of safranal. The procedure is simple to use. 0,1000 g of saffron are been extracted with 4 mL of chloroform assisted by an ultra sound bath for 15 minutes, after the filtration, the volume is stabilized to 5 mL and then the absorbance is recorded.

13:05 Mrs. E. Anastasaki explains the main steps for the picrocrocin determination.

For the determination of picrocrocin, the solid phase extraction provides a real measure of its value and there is also a correlation between the HPLC technique. The procedure has common steps with the determination of the coloring strength. After the extraction and the centrifugation the new step of the solid phase extraction is used and then the absorbance again is recorded.

13:25 Mr. Ch. Kanakis summarizes the new techniques. He emphasizes in the advantages of these two new approaches. He explains that the new methodology combines an affordable cost and a fast speed analysis. Furthermore, the results for the safranal and picrocrocin content obtained by the new methodologies are more accurate than with the current ISO.

He concludes by suggesting to the attendants the ways of the expression of the results acquired with the new method.

1. the introduction of a new methodology for determining the quality control consisting on an only value. Parameters such us humidity, flavour, aroma would be calibrated and a mathematical formula would be defined

OR

2. for the determined constituents only one value will again characterise the categories. The mathematic formula can be apply as following:

$$TQE_{1cm}^{1\%} = \left(\frac{Dcx10000}{m(100-H)} \right) x0.8 + \left(\frac{(Da+Df)x10000}{m(100-H)} \right) x0.2$$

Total Quality: it depends from the colouring Strength but also from the Flavor and Aroma Strength (Intensity).

1. D_c the absorbance of crocins at 440nm
2. D_f the absorbance of picrocrocin at 250 nm
3. D_a the absorbance of safranal at 308 nm
4. m mass of the saffron sample in grams
5. H humidity of the saffron sample

OR

3. each determined constituent will have each own values for each category.

He asks for the attendants' opinion.

13:50 Mrs. R. Gkola and Mrs. E. Kaliva express their opinion about the new method. If the results obtained with the new methodology have good correlation with the expensive and hard to use techniques, they agree in the implementation of the new method. They will discuss with the rest of the directors of the cooperative about the way of the expression of the results.

They ask about the picrocrocin method and the use of the vaccum manifold. If it is easy to use and how many samples can be done simultaneously.

14:30 Mr. Ch. Kanakis proposes to ask for the Spanish colleagues who have already worked a lot in this method.

14:35 Mrs. E. Anastasaki makes a brief introduction to the FT-IR spectroscopy. She exposes the main principles and the uses of the above spectrophotometric technique. Under this perspective, AUA tries to reach a method to detect adulterants with FT-IR.

15:00 Without having anything else to add Mr. N. Patsiouras thanks the attendants, closes the training course.