The isotopic approach to the authenticity of Cypriot traditional products

E. Ioannou Papayianni*, E. Tzioni, C. Savvidou , C. Louka and R. Kokkinofta

State General Laboratory - Ministry of Health, 44 Kimonos, 1451 Nicosia, CYPRUS

sglsnif@cytanet.com.cy

1. OVERVIEW

Authenticity study:

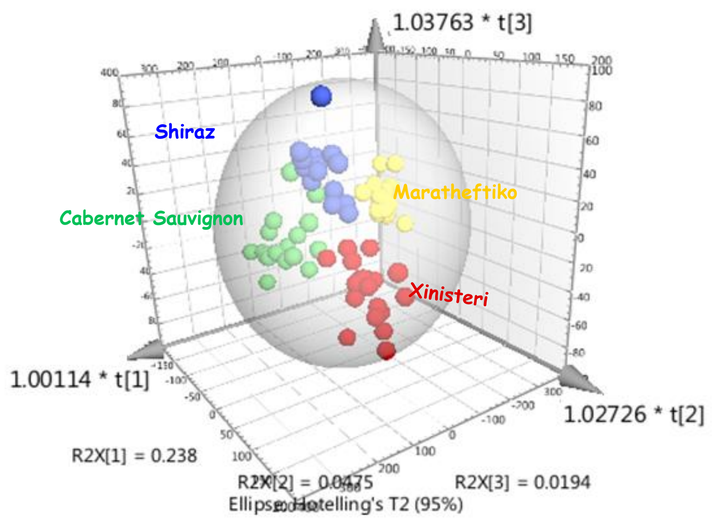
- The use of spectroscopic *SNIF-NMR [$(D/H)_I$, $(D/H)_I I$, R]* , *FT-IR* and other isotopic techniques *IR-MS: $^{13}C/^{12}C$, $^{18}O/^{16}O$* to *discriminate authentic and non authentic products.*
- The results are processed using *multivariate chemometric techniques (SIMCA, PCA, PLS).*
- It is believed that the differentiation of local products is related to the unique geological and climatic conditions existing in the island of Cyprus.

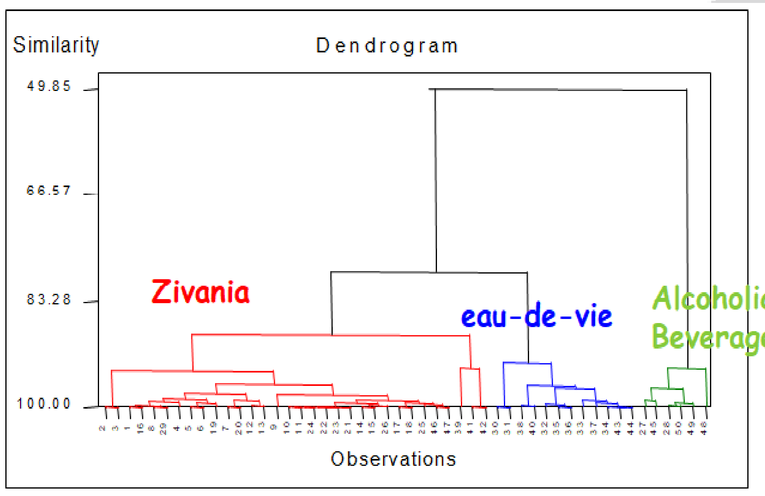
2. INTRODUCTION

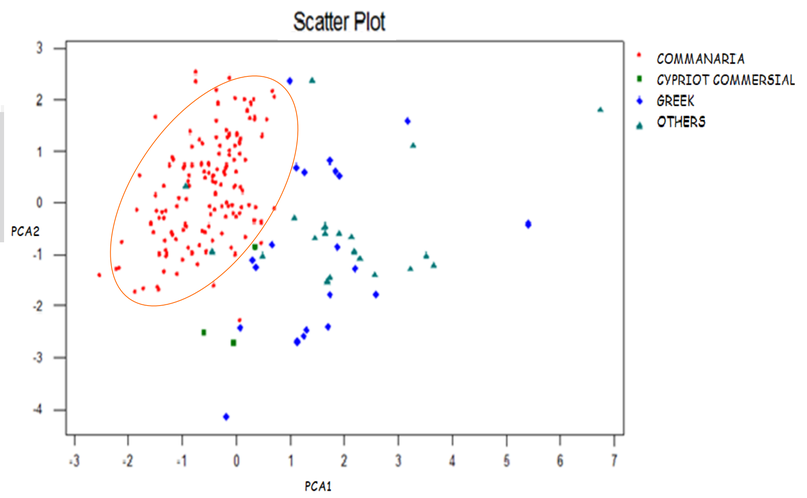
In the framework of the Project "*AGROFOOD*", the specific characteristics of indigenous Cypriot products were studied and compared to similar products from other regions, in order to differentiate and certify their origin.

The contribution of local products to the establishment of the "identity" of a region, aids in the creation of a correlation between the products, the unique characteristics and the geoclimatic conditions existing in the region of production. Recently, the consumers have diverted their interest towards local traditional products, which possess unique quality characteristics.

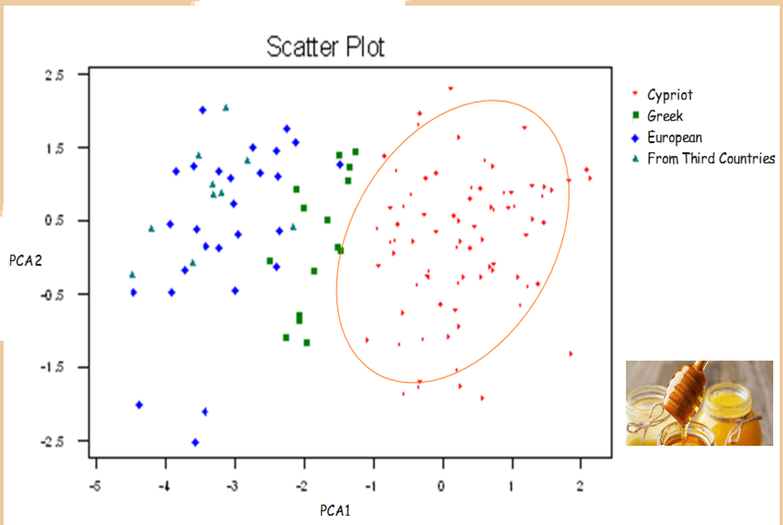
3. RESULTS



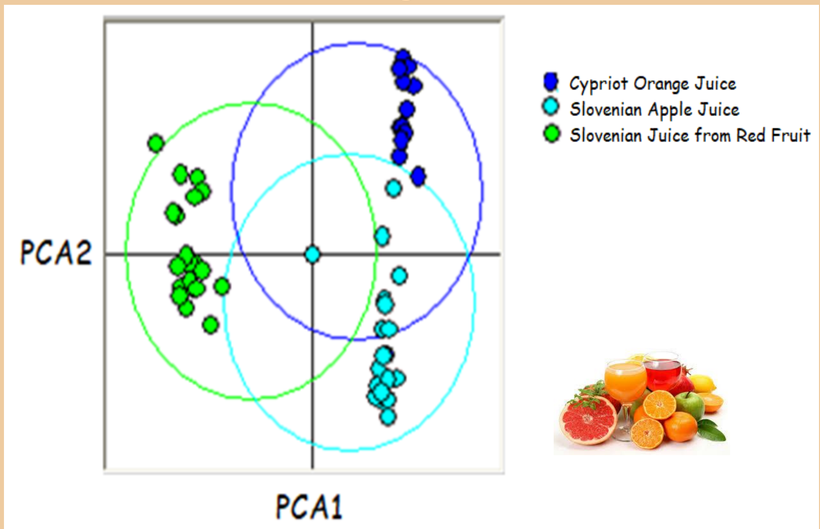




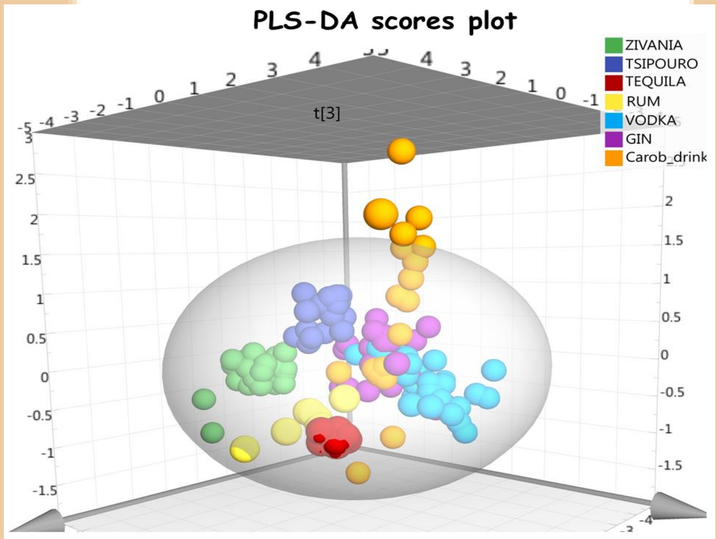
3a) Metabolic, Isotopic, Antioxidant and Elemental fingerprint for the characterization of Cypriot Wines, geographically and variegated.



3b) Spectroscopic and Chemometric discrimination of Cypriot ZIVANIA from eau-de-vie and other alcoholic beverages.



3c) Identification of the characteristics of POD Cypriot wine KOMMANDARIA".



3d) Isotopic discrimination of Cypriot HONEY.

3e) Geographical and Botanical Origin Discrimination of JUICES (Cypriot & Slovenian).

3f) Classification of the Cypriot alcoholic beverages *"Ceratonia"* (from carobs) and *"Zivania"* (from grapes), from other spirits from different origin.

4. CONCLUSIONS

Creating highest importance Isotopic Characteristics Database of Cypriot (traditional) products

- *Unique tool for the product authenticity control (competent authorities & scientific community).*
- *Enhance recognition and document the authenticity of local authentic products.*
- *Enhance consumer confidence by adopting a certificate of authenticity and digital identity products.*
- *Project with a sustainable business.*
- *Enhance the competitiveness of local authenticated products in the domestic and international markets.*

5. BIBLIOGRAPHY

[1] J.L.Crosse, T.N.Gallaher, J.J.Leary and S.Schreiner, "The Application of SNIF-NMR to the Analysis of Alcoholic Beverages", The Chemical Educator, ISSN 1430-4171, Vol.3, No.5, **1998**.

[2] European Commission: Food Authenticity- Issues and Methologies, Eurofins Scientific **1998**.

[3] R. Kokkinofta, C. Fotakis, M. Zervou, P. Zoumboulakis, C. Savvidou, K. Poulli, C. Louka N. Econommidou, E. Tzioni, K. Damianou, S. Loupasaki, P. Kefalas, "Isotopic and Elemental Authenticity Markers: A Case Study on Cypriot Wines", Food Analytical Methods, **2017**.

[4] N.Ogrinc, K.Bat, I. Kosir, T.Golob and R.Kokkinofta, "Characterization of Commercial Slovenian and Cypriot Fruit Juices Using Stable Isotopes, Journal of Agricultural Food Chemistry", 57, 6764-6769, **2009**.

[5] R. Kokkinofta, E. Ioannou, N. Economidou, E. Tzioni, C. Savvidou , C. Louka, "The Isotopic approach to the authenticity of Cypriot innovative spirit "Ceratonia", 5th Foodintegrity Conference,2018.

6. ACKNOWLEDGEMENTS

The project co-funded by the European Union (ERDF) and national funds from Greece and Cyprus within the Cooperation Program INTERREG V-A Greece – Cyprus 2014-2020.