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Characterization of Phenolic Compounds in Indigenous Extra Virgin Olive Oils from Different Algerian Olive Cultivars.

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I. INTRODUCTION

The **olive tree** is essential in Mediterranean agriculture and a key **source of fats in** the Mediterranean diet. The Mediterranean region dominates global olive production, and olive oil contains over **30 phenolic compounds** influencing its quality.

Virgin olive oil, rich in oleic acid and phenolic antioxidants, offers health benefits and potential disease prevention.

This study focused on characterizing **phenolic compounds** in olive oil from 10 **endemic cultivars** in northeastern Algeria.

III. RESULTS & DISCUISSION

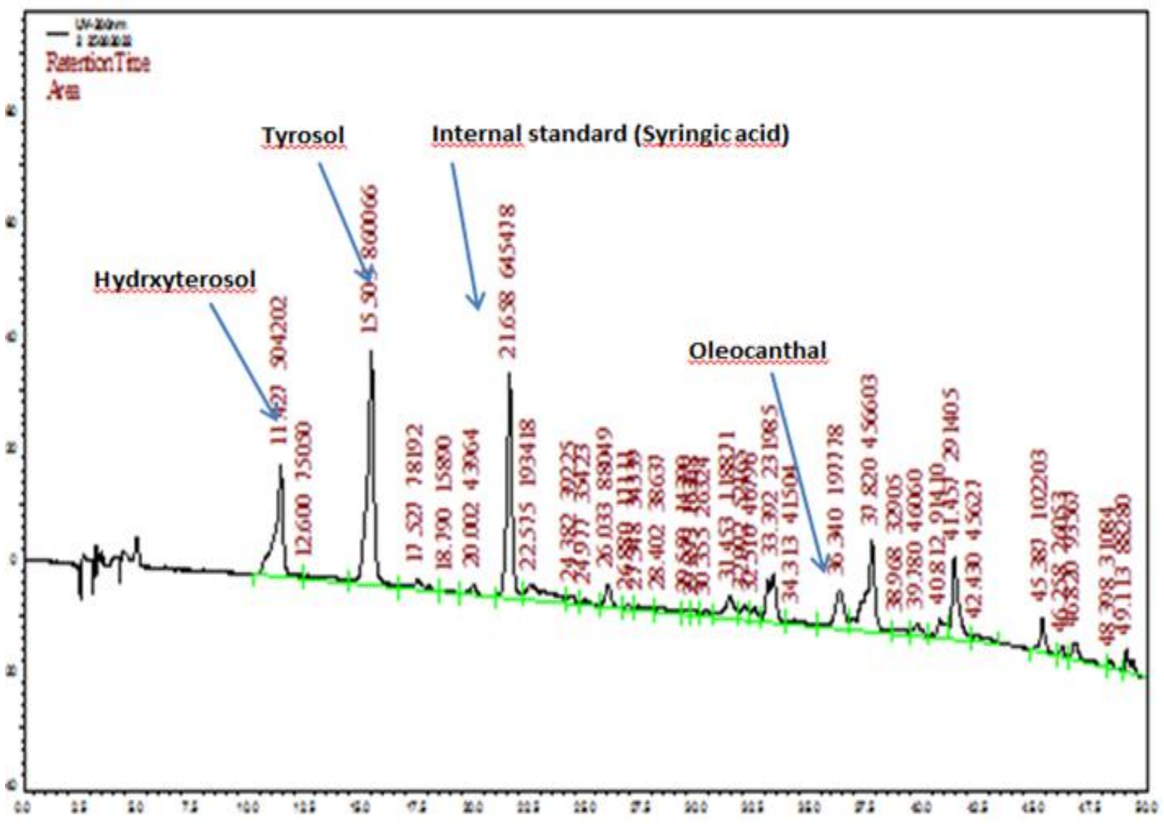

Figure 2: HPLC chromatograms at 280 nm of phenolic extracts from olive oil

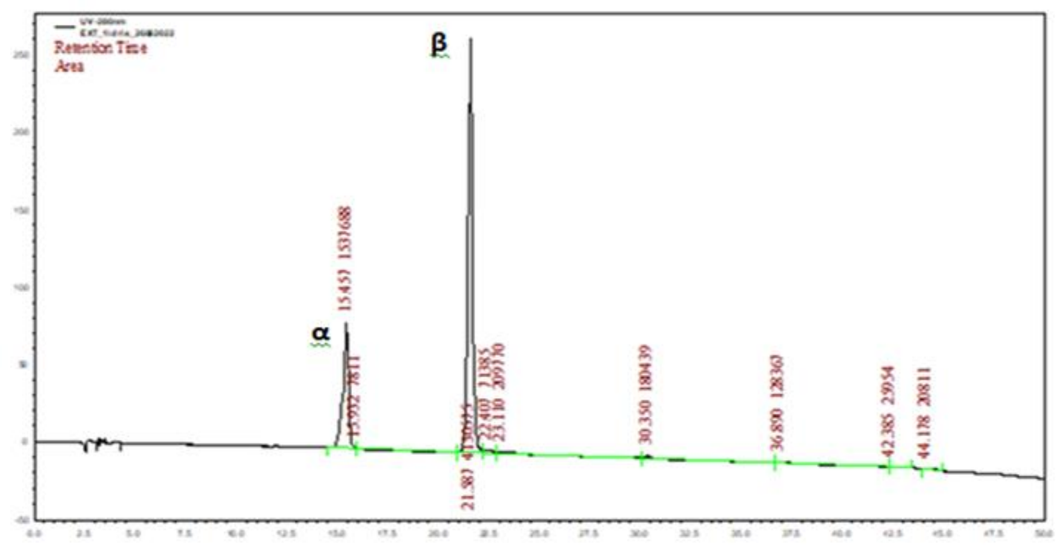

Figure 3: HPLC chromatograms at 280 nm of externa standard peaks (α: Tyrosol, β: Hydroxyterosol).

Table 1: HPLC phenolic composition of Algerian olive oils.

Cultivars	Hydroxytyrosol (mg/kg VOO)	Tyrosol (mg/kg VOO)	Oleocanthal (mg/kg VOO)	Polyphenols (mg T/kg VOO)
Bouchouk Lafayette	4,98±0,11 c	27,98±0,06 d	nd	173,25±0,35 g
Souidi	16,71±0,17 b	48,58±0,12 a	22,93±0,08 c	218,15±0,21 c
Aghchren d'El Ousseur	nd	3,7±0,28 i	nd	105,17±0,23 j
Azeradj	16,31±0,13 b	24,68±0,13 f	40,63±0,09 b	216,13±0,18 d
Boughenfous	3,31±0,27 e	37,77±0,08 b	67,93±0,03 a	263,01±0,01 a
Aguenaou	5,01±0,06 c	25,83±0,19 e	nd	205,01±0,01 e
Aghchren de Titest	nd	8,62±0,11 g	nd	112,03±0,04 i
Aberkane	nd	6,84±0,12 h	nd	148,01±0,01 h
Limli	4,31±0,03 d	36,27±0,38 c	nd	181,05±0,07 f
Sigoise	33,74±0,05 a	35,96±0,01 c	nd	253,02±0,03 b

II. MATERIEAL & METHODS

We employed the **IOOC (2017)** method to isolate the phenolic fraction from olive oils, starting with 2g of oil per sample mixed with an internal standard solution and methanol/water (80/20). After centrifugation and extraction repeats, the extracts were dried and dissolved in methanol/water (1/1, v/v).

Filtration followed by HPLC analysis with a C18 column and UV detection at 280 nm was performed, using syringic acid as an internal standard for compound identification based on relative retention times.

Figure 1: HPLC equipment used for separation and quantification of biophenols in olive oil in Pharmacognosy & Natural Products Chemistry/ University National of Athene.

Table 1 outlines phenol levels (mg/kg) measured via HPLC in oils from ten olive cultivars, with **hydroxytyrosol** and **tyrosol** being prominent. Higher hydroxytyrosol levels were noted in **Sigoise**, **Azeradj**, and **Souidi** cultivars, while tyrosol was consistently elevated. These trends align with findings in Algerian varieties by **Laincer et *al*. (2016)**. Significant variations in phenolic concentrations ($p \leq 0.0001$) were observed, critical for antioxidant activity and flavor in the oils.

IV, CONCLUSION

Further research is needed to confirm these findings and expand knowledge of Algerian olive heritage. The results may impact olive variety selection for new plantations, emphasizing chemical properties like fatty acids, polyphenols, and pigments, which can enhance nutritional value and oil quality.

V, REFERENCES

- Laincer F., Laccarino N., Amato J., Pagano B., Pagano A., Tenore G., Tamendjari A., Rovellini P., Venturini S., Bellan G., Ritieni A., Mannina L., Novellino E., Randazzo A., 2016. Characterization of monovarietal extra virgin olive oils from the province of Béjaia (Algeria). *Food Research International*, n°11, pp. 1-11.
- IOC 2017. Document COI/T.20/Doc No 29/Rev1. Determination of biophenols in olive oils by HPLC. International Olive Oil Council, Madrid.