Olive Wellness INSTITUTE™

A Phytochemical Comparison of

OLIVE LEAF EXTRACTS IN AUSTRALIA & NORTH AMERICA

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AIM

To evaluate and compare the phytochemical profile of commonly used **Olive Leaf Extracts (OLE)** available in the Australian and North American markets.

METHOD

12 OLE's were analysed at **Modern Olives** (an accredited specialist olive chemistry laboratory). From Australia: 5 practitioner and 5 over the counter (OTC) products. From North America: 2 over the counter products.

PRODUCTS CHOSEN FOR EVALUATION

OVER THE COUNTER PRODUCTS:

- Comvita OLE (Medi Olive 66; Fresh leaf)
- Comvita OLE (Medi Olive 136; Fresh Leaf)
- Healthy Care OLE (Dry Leaf)
- Wellgrove Heart Health (Fresh Leaf)
- Wellgrove Immune Support (Fresh Leaf)
- Barlean's Olive Leaf Complex (undeclared if fresh or dry)
- Comvita Syn12 (Fresh leaf)

PRACTITIONER ONLY PRODUCTS:

- Herbal Extract Company (HEC) (Dry Leaf)
- MediHerb (Dry Leaf)
- Optimal Rx (Dry Leaf)
- Pharmaceutical Plant Company (PPC) (Dry Leaf)
- Pharmaceutical Plant Company (PPC) (Fresh Leaf)

Methods

OLEUROPEIN - Reversed phase high performance liquid chromatography (BP method).
BIOPHENOLS PROFILE - Reversed phase high performance liquid chromatography (IOC/T.20/No.29 adapted for leaf extracts).
TRITERPENOIDS - Reversed phase high performance liquid chromatography (in house method).
STEROLS - Thin layer chromatography separation and subsequent gas chromatography (IOC/T.20/No.30).

What is Olive Leaf Extract?

A herbal medicine derived from the olive leaf, containing an abundance of bioactive compounds. Whilst the main constituents are oleuropein and hydroxytyrosol, olive leaf also contains a large number of other biophenols including *p*-coumaric acid, oleacein, luteolin, and many others.

Oleuropein & Hydroxytyrosol; The MOST ABUNDANT biophenols found in OLE.[1]

Health Effects:

OLE is a natural antioxidant with demonstrated ability in-vitro and in-vivo. A 20 mL daily dose of OLE standardised to 136mg oleuropein per day reduced daytime hypertension in pre-hypertensive patients [−3.95 (±SD 11.48) mmHg, p = 0.027] and 24-h SBP [−3.33 (±SD 10.81) mmHg, p = 0.045] and daytime and 24-h DBP [−3.00 (±SD 8.54) mmHg, p = 0.025; −2.42 (±SD 7.61) mmHg, p = 0.039].[2] Results in the OLE group were all significantly lower following OLE intake, relative to the control.[2]

Other research suggests antimicrobial and antiviral activity, as well as a positive effect on reducing some risk factors for metabolic syndrome. Additionally, OLE has been shown to reduce cardiovascular risk factors such as hypertension, improve vascular function and has lipid lowering effects.[3,4,5]

Synergistic Effect of Total Biophenols

Research suggests that the health effects associated with OLE are likely related to bioactives working in a synergistic manner.[5,6] **This synergistic effect highlights the importance of comparing total biophenol content, rather than just individual compounds in isolation.** Despite this, many products on the market place a sole emphasis specifically on the levels of oleuropein the product contains.

RESULTS

- There was considerable variation observed in the phytochemical profiles of assessed products.
- In particular, there was a 34-fold variation in oleuropein concentration between the products with the lowest and highest levels, and almost 5-fold variation in total biophenol content.
- Ratios between the various constituents also varied considerably between extracts.

KEY DIFFERENCES

Over-the-counter OLE products had oleuropein levels on average **2.7 times higher** than practitioner products.

Australian OTC products had on average **51% higher** oleuropein, and **97% higher** total biophenols per mL than North American OTC products. Fresh leaf derived extracts demonstrated far higher levels of oleuropein (**on average 3.3 times higher**) when compared with dry leaf extracts.

Note: Barlean's Olive Leaf Concentrate was excluded from this comparison as it did not declare whether it was from fresh or dry leaf.

No constituent quantity claims were made on practitioner products whilst all except one North American OTC product met or exceeded their label claims.

This research suggests that there is considerable variation in the phytochemical profiles of different OLE products, and that practitioner products do not necessarily have a better biophenol profile when compared with over the counter products.

LIMITATIONS OF THIS STUDY

Variation may exist between batches of the same brand and only a single batch of each product was analysed.
Only 5 Australian and 2 North American over the counter products were evaluated.
Only liquid extracts were assessed while alternative formats of delivery exist.

THIS TABLE DEMONSTRATES THE QUANTITY OF OLEUROPEIN, HYDROXYTYROSOL AND TOTAL BIOPHENOLS IN MILLIGRAMS PER MILLILITRE IN A RANGE OF OLE PRODUCTS.

SAMPLE DESCRIPTION	Practitioner or over the counter	Oleuropein (mg/mL)	Hydroxytyrosol (mg/mL)	Total Biophenols (mg/mL)
HEC	P PRAC	1.2	6.2	12.2
PPC (Fresh)	P PRAC	6.6	1.1	10.8
Wellgrove Heart Health	O OTC	8.9	0.9	12.3
Comvita Medi Olive 136	O OTC	13.6	0.2	10.5
Optimal Rx	P PRAC	0.4	3.7	8.3
MediHerb	P PRAC	4.1	2.5	8.2
Wellgrove Immune Support	O OTC	5.3	0.8	7.9
Comvita Medi Olive 66	O OTC	6.5	0.3	5.5
Healthy Care	O OTC	4.9	0.2	4.1
PPC (Dry)	P PRAC	0.9	0.2	2.6
Barlean's Natural	O OTC	5.5	0.1	4.3
Comvita Syn12	O OTC	4.8	0.3	2.6

Of all the products tested, the top three performing were:

Oleuropein	Total Biophenols
O Comvita Medi Olive 136	O Wellgrove Heart Health
O Wellgrove Heart Health	P HEC
P PPC (Fresh)	P PPC (Fresh)

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