



## A Phytochemical Comparison of **OLIVE LEAF EXTRACTS IN THE AUSTRALIAN MARKET PLACE**

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### NEW PUBLISHED RESEARCH

#### AIM

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

#### METHOD

## 10 Australian OLE's



were analysed (5 Practitioner Only and 5 Over the Counter (OTC)) for their phytochemical profiles. Analysis was conducted at **Modern Olives**, an accredited specialist olive chemistry laboratory.

#### 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)

##### 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 (European Pharmacopoeial 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).

### 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.

### 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 [ $-3.95 (\pm SD 11.48)$  mmHg,  $p = 0.027$ ] and 24-h SBP [ $-3.33 (\pm SD 10.81)$  mmHg,  $p = 0.045$ ] and daytime and 24-h DBP [ $-3.00 (\pm SD 8.54)$  mmHg,  $p = 0.025$ ;  $-2.42 (\pm SD 7.61)$  mmHg,  $p = 0.039$ ].<sup>2</sup> Results in the OLE group were all significantly lower following OLE intake, relative to the control.<sup>2</sup>

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.<sup>3,4,5</sup>

**Oleuropein  
& Hydroxytyrosol;**  
The MOST  
ABUNDANT  
biophenols  
found in OLE.<sup>1</sup>

### Synergistic Effect of Total Biophenols

Research suggests that the health effects associated with OLE are likely related to bioactives working in a synergistic manner.<sup>5,6</sup> **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 (MG/ML)

- There was considerable variation observed in the phytochemical profiles of assessed products.
- In particular, there was a 35-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 **2.4 times higher** than practitioner products.



Fresh leaf derived extracts demonstrated far higher levels of oleuropein **(on average 3.5 times higher)** when compared with dry leaf-based extracts. Almost all practitioner products use dry leaves compared to over the counter products where fresh leaf is utilized.

No constituent quantity claims were made on practitioner products while analytical results of over the counter products 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 over the counter products were evaluated – more exist on the Australian market.
- 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 THE PRODUCTS SAMPLED.**

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

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

### Oleuropein

- Comvita Medi Olive 136
- Wellgrove Heart Health
- PPC (Fresh)

### Total Biophenols

- Wellgrove Heart Health
- HEC
- PPC (Fresh)

To see the full paper and references, access this QR code:

