



# Olive Wellness Institute Update:

EVOO Health and Nutrition  
Report and ADG

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# Olive Wellness Institute background



- Funded by Hort Innovation
- Launched in 2018
- Target audience
  - Health professionals
  - Food service professionals
- Secondary audience:
  - Olive growers and processors

# About the Olive Wellness Institute

The Olive Wellness Institute is a science repository on the nutrition, health and wellness benefits of olives and olive products, which is all subject to extensive peer review. The institute is guided by scientific experts that specialise in the nutrition, health and wellness benefits related to olive products



## CREDIBILITY

All information developed and distributed by the Olive Wellness Institute is subject to extensive review by the Advisory Panel as a result of our evidence based, science-first approach.



## EVIDENCE BASED

The Olive Wellness Institute is strictly committed to delivering evidence-based information informed by high-level research standards.



## EXPERTISE

The Olive Wellness Institute is guided by leading scientists, researchers and health professionals who have research expertise in olives, olive oil and its uses in traditional diets.

## Downloadable resources

How to look for a **GOOD QUALITY EXTRA VIRGIN OLIVE OIL**

With an endless choice of oils at your local supermarket or food store, how do you know what is the best quality Extra Virgin Olive Oil (EVOO) and essentially the healthiest oil for you? EVOO is the highest grade of Olive Oil and the fresh juice of the olive with a wide range of well-evidenced health benefits.

**WHAT YOU SHOULD LOOK FOR ON YOUR EXTRA VIRGIN OLIVE OIL BOTTLE LABEL:**

- The label should state "EXTRA VIRGIN"
- The label should include a BEST BEFORE DATE AND HARVEST DATE
- The bottle should be a DARK COLOUR AND GLASS

Good quality EVOO doesn't last forever and the degradation of oil will happen more quickly when exposed to light and oxygen. If EVOO is stored in a dark coloured bottle away from heat and light, it will stay fresher for longer.



Showing the total PHENOL CONTENT

Some EVOOs will state on the Nutrition Information Panel the total phenol content. The activity and actions of these phenolic compounds contribute to the health benefits of EVOO.

Choose an oil that is CERTIFIED

Olive oil is one of the topmost adhered-to food products worldwide and the food product most vulnerable to food fraud. Standards exist nationally and internationally to prevent EVOO adulteration, and to guarantee the quality.<sup>1,2</sup>

1. Standards Australia, Australian Standard Olive Oil and olive pomace oils, 4836:2011, Standards Australia Limited 2011. <http://www.standards.org.au/standards/norms/standards/norm/4836-2011>
2. Bialini D, Olive Oil: More constituents and health. Boca Raton, FL: CRC Press; 2009
3. Suredi M, Baccantini S, Fabbiani G, et al. Phenolic compounds in olive oil antioxidants: Health and nutraceutical potential according to their chemical composition. *Journal of Agricultural and Food Chemistry*. 2010; 58(11):5812-5817.
4. Moore J, Speck J, Lipp M. Development and Application of a Database of Food Importation, Fraud and Economically Motivated Adulteration from 1980 to 2010. *Food Int*. 2015; doi: 10.1111/1751-2220.12242
5. De Linger E. Dark Report on the food olive fraud in the EU. Olive Oil and the World Forum (2016) (EU). Committee on the Environment, Public Health and Food Safety. European Parliament 2015. <http://www.europarl.europa.eu/press-portal/152623>

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## Extensive information on:

- ✓ Health benefits
- ✓ Extra virgin olive oil
- ✓ Olive leaf extract
- ✓ Olive leaf tea
- ✓ The Mediterranean Diet
- ✓ Cooking with EVOO

## Latest research



Developing a Mediterranean Healthy Food Basket and an Updated Australian Healthy Food Basket Modelled on the Australian Guide to Healthy Eating

• Australian Population • Mediterranean Diet



Virgin Olive Oil Ranks First in a New Nutritional Quality Score Due to Its Compositional Profile

• Extra Virgin Olive Oil • Olive Oil

## Recipes



Baked Truffle Cauli Mac and Cheese

• Vegetarian



Lemon Almond Bliss Balls

• Desserts • Quick & Easy • Vegetarian

## Blogs



Can you cook with extra virgin olive oil?

• Cooking • Culinary Nutrition • Extra Virgin Olive Oil



Extra virgin olive oil vs canola oil - which is healthier?

• Extra Virgin Olive Oil

Introduction to Olive Oil

### GRADES OF OLIVE OIL

Natural olive oils	Refined olive oils	Olive-pomace oils
<b>EXTRA VIRGIN OLIVE OIL</b> Highest grade of olive oil. Free acidity (0.8g/100g) up to and no defects. High in natural antioxidants and polyphenols.	<b>REFINED OLIVE OIL</b> Obtained from natural olive oils and then refined. No natural antioxidants and low in flavour. High in trans fats.	<b>CRUDE OLIVE-POMACE OIL</b> Obtained from treating olive pomace with solvent/chemical treatments. Not fit for human consumption without further processing. For refining or technical use only.
<b>VIRGIN OLIVE OIL</b> Lower grade than EVOO. Free acidity of 2.00g/100g and/or slight defects. Moderately high in natural antioxidants.	<b>OLIVE OIL</b> Composed of refined olive oil and 5-15% EVOO and/or VOO. Low in flavour and antioxidants. High in trans fats.	<b>REFINED OLIVE-POMACE OIL</b> Oil produced from refining crude olive pomace oil. High in trans fats. No natural antioxidants.
<b>LAMPANTE OLIVE OIL</b> Not fit for consumption without further processing. Only intended for refining or technical use.		<b>OLIVE-POMACE OIL</b> Blend of refined olive pomace oil and EVOO or VOO.

Grade definitions are based on the Australian Standard for Olive oils and olive pomace oils. Definitions are based on 'light' and 'dark' olive oil and are not related to the colour of the oil. These definitions are not permitted in the standards as they are misleading. These terms refer to refined olive oils, and are not lighter in colour.

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EVOO = Extra Virgin Olive Oil • VOO = Virgin Olive Oil

# EVOO Health and Nutrition Report

Olive Wellness  
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**Extra Virgin Olive Oil  
Health and Nutrition  
Report**

AUSTRAIAN  
EXTRA  
VIRGIN  
OLIVE OIL

**Hort  
Innovation** | **OLIVE  
FUND**  
Strategic levy investment

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**Extra V  
Health &  
Report**

**Hort  
Innovation**  
Strategic levy investm

## What is Unique About Extra Virgin Olive Oil?

Extra virgin olive oil (EVOO) is unique due to its fatty acid profile, as well as the natural occurrence of many bioactive compounds, like phenols, phytosterols, tocopherols (vitamin E) and carotenoids. These provide several functional properties including a longer shelf life, thanks to their high oxidative stability function<sup>1,2</sup>.

### Biophenols and antioxidants

EVOO is obtained by manually crushing and pressing olives. As a result, it contains a high amount of the protective plant phytochemicals.

EVOO contains numerous phenolic compounds — powerful antioxidants that help protect the body against free radical damage that contributes to disease and ageing<sup>2,3</sup>.

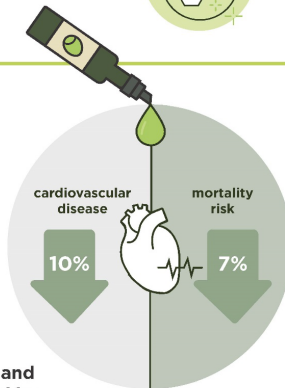
Biophenols found in EVOO have antimicrobial, antioxidant and anti-inflammatory properties<sup>4</sup>.



### Supports heart health

EVOO may help reduce risk of heart disease<sup>5</sup>. Compounds such as oleuropein derivatives, oleocanthal and hydroxytyrosol contribute to heart health<sup>7</sup>.

The well-known PREDIMED study found that for each 10g/day increase in EVOO consumption (Approximately 1/2 tablespoon), cardiovascular disease and mortality risk decreased by 10% and 7% respectively<sup>7</sup>.

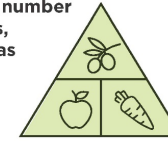


### Glycaemic control

The phenolic compounds present in EVOO have been shown to assist with glucose metabolism and improve the sensitivity and effectiveness of insulin<sup>9</sup>.

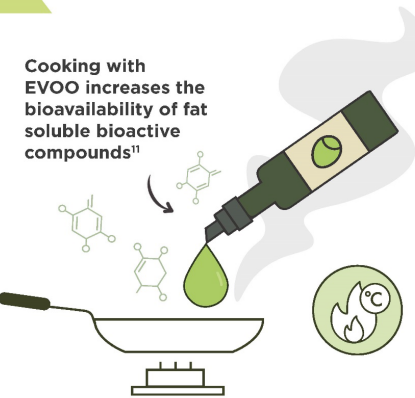
### Healthy fats

The well-researched health benefits of the Mediterranean diet are due to a number of dietary factors, including EVOO as the main source of fat<sup>8</sup>.



### Benefits of cooking

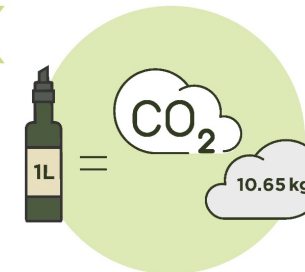
EVOO is a highly heat stable oil. It is less prone to oxidation compared to other cooking oils. It is suitable for all home cooking, including high temperature cooking such as sautéing, frying and baking. This is because EVOO is naturally produced, has not undergone any refining, contains high levels of stable monounsaturated fat (and low levels of unstable polyunsaturated fat), and high levels of natural antioxidants, which help stop these fats from breaking down and forming harmful polar compounds<sup>10</sup>.



Cooking with EVOO increases the bioavailability of fat soluble bioactive compounds<sup>11</sup>.

### Better for the planet

It is estimated that producing one litre of EVOO captures an average of 10.65 kg of CO<sub>2</sub> from the atmosphere, with one hectare of the average olive grove neutralising the annual carbon footprint of a person<sup>12</sup>.



## Types and Grades of Olive Oil<sup>13</sup>

According to the Australian Standards for Olive Oil and Olive-Pomace Oil, an olive oil label must contain the grade of olive oil (i.e. extra virgin olive oil or Olive Oil)<sup>14</sup>. If an oil does not include the term “extra virgin” on the label, it is not extra virgin olive oil (EVOO).

### Extra Virgin Olive Oil (EVOO)

The highest grade of olive oil, obtained solely from the fruit of the olive tree (*Olea europaea* L.) by mechanical means with no chemical treatments. This results in a high natural antioxidant content. The natural extraction process used to produce EVOO ensures it retains the nutrients and antioxidants from the olive fruit<sup>15</sup>. To be “extra virgin” the oil has to meet certain criteria: a free acidity, expressed as oleic acid, of not more than 0.8 grams per 100 grams as well as other strict chemical parameters and having an excellent and perceptible fruity flavour and odour<sup>16</sup>. The oil must show a sensory fruity note higher than zero, which indicates the aroma and flavour, and more importantly, a median of zero defects, which means trained testers cannot detect any defects. If an oil meets these criteria it is eligible for the “extra virgin” label<sup>17,18</sup>. **Compared to other types of olive oil, EVOO must meet more stringent requirements to be eligible to use the nomenclature “extra virgin”.**



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The composition of EVOO is determined by genotypic potential, environmental factors, fruit ripening, harvest time, agricultural factors (irrigation, sunlight, grove management) and also technological factors such as the method applied for oil extraction and storage conditions<sup>19</sup>.



**TIP:** The fresher the EVOO, the higher the phenol content. Look for the harvest date on the bottle to make sure you are getting new season EVOO. Harvest typically takes place between April and June in the Southern Hemisphere, and between October and December in the Northern Hemisphere.



### Virgin Olive Oil (VOO)

Has less stringent limits for many of the analytical parameters compared to EVOO, such as a higher free acidity, expressed as oleic acid, of not more than 2 grams per 100 grams, with reasonably good flavour and odour<sup>16</sup>, although some organoleptic defects are present.

### Olive Oil (OO)

A blend of refined olive oil and virgin olive oils and typically only contain 5-15% of EVOO or VOO. It contains fewer antioxidants and therefore does not offer the same health benefits as EVOO. The refining process typically involves the use of high heat and/or chemicals that strip the oil of important nutrients and antioxidants. Its sensory properties correspond to virgin olive oil, but may vary depending on individual regulations in each country. **Misleading marketing terms such as Pure Olive Oil or Extra Light Olive Oil are other ways of describing refined olive oil blends.**



### TIP: How to choose a good EVOO

At an international level, the **International Olive Council (IOC)** supports international olive oil standards for the best interest of the olive industry.

In Australia, to guarantee an oil labelled as “Extra Virgin” is truly EVOO, look for the Australian certification symbol on the label. This ensures the oil is complying with the Australian standards and passes the markers of quality to be classified EVOO. There are other certification standards around the world. For example, in the USA, the Californian Olive Oil Council (COOC) provides EVOO grade certification and the European ‘Protected Origin of Destination’ certification identifies EVOO products that are produced, processed and prepared in specific geographical areas<sup>20</sup>.

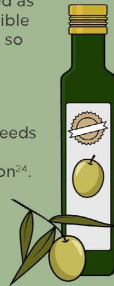
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## EVOO COMPARED TO OTHER EDIBLE OILS

The production of extra virgin olive oil (EVOO) is vastly different from most other edible oils, which are made from seeds. Many of these seed-based oils are marketed as 'vegetable oils', which is an umbrella term to include oils such as soybean, canola, sunflower and peanut oil<sup>21</sup>.

In the Australian Food Standards Code, oil seeds are defined as 'seeds from a variety of plants used in the production of edible vegetable oils<sup>22</sup>.' Seeds are very difficult to extract oil from, so they need to be heated and the oil extracted with solvents and/or high pressure.

Seed oils are then refined before being suitable for human consumption. This means that most of the antioxidants in seeds are lost during production<sup>23</sup>, and there can be formation of harmful trans fats and other secondary products of oxidation<sup>24</sup>. EVOO on the other hand is minimally processed, and produced by simply crushing olives, retaining the most amount of natural antioxidants and without the formation of any trans fats or secondary products of oxidation.



### Canola Oil

Canola oil is a seed-based oil that manufacturers use in a variety of foods and other products. Canola oil is generally considered a "healthy" oil because it is very low in saturated fat (7%), and like olive oil it is high in monounsaturated fat (55%), but it also contains 26% polyunsaturated fat<sup>25</sup>. Canola oil production generally involves heating, pressing, chemical extraction, and refining. EVOO contains up to **120x more** health-promoting biophenols compared to canola oil<sup>26</sup>.



During heating and cooking, many of the polyunsaturated fats in canola oil are broken down<sup>27</sup>, whereas the EVOO fats are more protected from oxidation due to a higher presence of biophenols<sup>10</sup>.

Research from an Australian laboratory found less unwanted by-products are produced when EVOO is heated compared to canola oil - specifically free fatty acids, polar compounds and secondary products of oxidation<sup>10</sup>. Animal studies have linked these polar compound by-products to Alzheimer's Disease and increased inflammation<sup>28,29</sup>.

### Coconut Oil

Coconut oil is stable for cooking at high temperatures, however it contains only trace amounts of antioxidants and is predominantly saturated fat. By comparison, EVOO is rich in beneficial antioxidants such as tocopherols and hydroxytyrosol<sup>30</sup>.



The high levels of saturated fats in coconut oil can significantly increase LDL cholesterol, with elevated LDL cholesterol levels linked to increased risk of heart disease<sup>31,32</sup>.

### Sunflower Oil

Sunflower oil is low in saturated fat and high in polyunsaturated fats, specifically omega 6 fatty acids such as linoleic acid, which can help to reduce cholesterol levels<sup>33</sup>. However, sunflower oil is refined to give the oil a neutral flavour, appearance and smell, and as a result has fewer bioactive compounds than EVOO. Sunflower oil has been shown to produce a higher amount of aldehydes (a carcinogenic chemical found in the fumes from cooking oils) compared to other oils (rapeseed, palm, soybean), regardless of the method of cooking<sup>34</sup>.





## Global Production of EVOO

Growth in global EVOO production over time provides evidence of the greater interest people have in using EVOO. For instance, in 2012/13 global production was 1.947 billion litres, whereas this had grown to 3.085 billion litres by 2021/22<sup>35</sup>.

### EVOO Consumption in Australia

Nearly two thirds (65%) of Australians use EVOO in raw food preparation or savoury cooking. Almost half of those surveyed from July to December 2021 identified the health benefits as the main motivating factor for their choice of oil, followed by sensory preference (47%), versatility (10%) and convenience (9%)<sup>36</sup>. Similar trends are being seen in the USA, where olive oil is now the most commonly used dietary fat source for cooking and food preparation, followed by vegetable and canola oils<sup>37</sup>.

The COVID pandemic forced more people to cook at home and many consumers opted to purchase higher quality ingredients such as EVOO. The rise in EVOO use in Australian households has the potential to contribute to healthier dietary patterns and positively impact population health due to the myriad of health benefits associated with its high nutritional quality and unique composition.

Australians who regularly use EVOO are consuming approximately one tablespoon per day<sup>37</sup>. This is markedly lower than the recommended amount of two to three tablespoons per day, which is required to elicit many of the health benefits associated with EVOO. It is therefore necessary for health care professionals to recommend the use of EVOO, particularly for patients at risk of cardiovascular disease and associated co-morbidities. Suggestions on how to add more EVOO to a daily diet are included later in this report.



## Affordability Of Extra Virgin Olive Oil



Whilst extra virgin olive oil (EVOO) has a higher price point than other refined oils, it is no different from many food categories where minimally processed healthy foods are generally more expensive compared to highly-processed discretionary foods that use cheaper ingredients. More than 60% of Australians exceed the recommended intake of discretionary foods, which is a risk factor for obesity and chronic disease<sup>38</sup>. The health benefits of EVOO are numerous and it is important for health professionals and other stakeholders to communicate the health-cost benefit to encourage their patients to invest in long term health outcomes and choose EVOO over cheaper refined oils.

A plant-based Mediterranean style diet, with EVOO as the principal fat, has been shown to be more affordable than an individual's usual eating pattern, especially when compared to a highly processed Western diet<sup>39-41</sup>.

### RECEIPT

A 6-week intervention study in the US in 2013 found that individuals who followed a plant-based Mediterranean style eating pattern, with an emphasis on cooking with EVOO, reduced their usual grocery spend by approximately \$30 USD each week. Additional improvements included a reduction in body weight as well as a reduction in purchases of unhealthy products such as carbonated beverages<sup>42</sup>.

**TOTAL SAVING \$30 USD**

### RECEIPT

A detailed analysis on 20 participants involved in a 2017 randomised controlled trial in Australia found that following a Mediterranean diet was more affordable compared with the participants' baseline diet, and reduced total grocery spend by approximately \$26 AUD per week<sup>41</sup>.

**TOTAL SAVING \$26 AUD**



## EVOO Nutrient Composition

### NUTRITION INFORMATION

Serving size: 15mL

	Average Quantity per Serving	Average Quantity per 100mL
Energy	510kJ (121kcal)	3399kJ (809kcal)
Fat, total	13.8g	91.9g
Saturated fat	2.1g	14.3g
Trans fat	0g	0g
Polyunsaturated fat	1.3g	8.4g
Monounsaturated fat	9.7g	64.6g
Cholesterol	0mg	0mg
Vitamin A (retinol equivalents)	0.3ug	2ug
Vitamin E (alpha tocopherol)	2.3mg	15.6mg
Vitamin K	9ug	60.2ug*
Beta carotenes (Beta carotene equivalents)	1.5ug	10ug
Phytosterols	27.7mg	184.7mg
Total Biophenols	4.63mg	30.84mg
Oleuropein derivatives	0.5mg	2.1mg
Oleocanthal	0.56mg	3.74mg
Tyrosol	0.1mg	0.66mg
Hydroxytyrosol	0.14mg	0.92mg
Squalene	88.9mg	592.5mg

Sources: Australian Food Composition Data 2; Modern Olives Laboratory Services; USDA National Nutrient Database.  
Values are averages only and may vary based on season, olive cultivar, climate condition and production processes.

### EVOO FATTY ACID PROFILE<sup>25,42,43</sup>

The fatty acid profile of extra virgin olive oil (EVOO) is also a major contributor to its health benefits.

7-20%  
saturated  
fat

53-85%  
monounsaturated  
fats - mainly oleic  
acid, which has  
been identified  
as important in  
the prevention of  
coronary heart  
disease<sup>44,45</sup>

Naturally  
occurring trans  
fatty acids  
are always  
**below**  
0.1%<sup>215, 25</sup>

<3-23.5%  
polyunsaturated  
fat

Studies consistently link a diet high in monounsaturated fat with favourable effects on markers of cardiovascular disease (heart disease and stroke)<sup>46,47</sup>. This includes a reduction in markers of blood pressure<sup>48</sup>, cholesterol levels<sup>49</sup> and blood glucose levels<sup>50</sup>.

### BIOACTIVE COMPOUNDS / PHENOLICS

Like all plant foods, extra virgin olive oil (EVOO) contains natural antioxidants from the olive fruit and is rich in a variety of bioactive phenolic compounds<sup>51</sup>. These phenolic compounds in EVOO are responsible for many of its biological properties and sensory attributes, which range from 80 to 1200 mg per kg<sup>215</sup>.

EVOO contains numerous phenolic compounds, depending on genetics, soil, irrigation and climate, as well as processing methods. The phenolic profile of EVOO is one of the key reasons for the health benefits of EVOO when compared with refined oils (which are devoid of, or are very low in natural antioxidants)<sup>53</sup>. The predominant phenolic compounds found in EVOO are oleuropein and ligstroside derivatives and their hydrolytic breakdown products, hydroxytyrosol and tyrosol<sup>54</sup>, which have anti-inflammatory, antioxidant, neuroprotective, and immunomodulatory properties<sup>55</sup>. Hydroxytyrosol has also been shown to inhibit low-density lipoprotein (LDL) oxidation<sup>56</sup>.

#### EFSA health claim

In 2011, the European Food Safety Authority (EFSA) approved a health claim related to polyphenols in olive oil and their possible protection of blood lipids against oxidative stress. The panel established that "5mg of hydroxytyrosol and its derivatives (e.g. oleuropein derivatives and tyrosol) in olive oil should be consumed daily, as part of a balanced diet, to protect against oxidative damage"<sup>157</sup>.

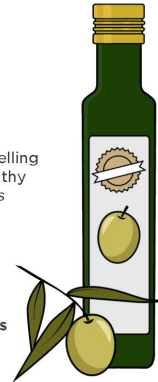


# EVOO and Front of Pack Labelling Systems

## Health Star Rating ★★★★★

The Health Star Rating (HSR) system is a voluntary front of pack labelling system in Australia and New Zealand to help consumers choose healthy products in each food category at the point of purchase. Health stars (½-5 stars) are determined using an algorithm which assesses select nutrients (energy, saturated fat, sugars, sodium, protein, fibre and the percentage of fruit/vegetables/nuts and legumes). Edible oils are only assessed for energy and saturated fat.

The HSR system is not suitable for EVOO for the three main reasons outlined on this page.



### 1. Packaged foods, not single ingredients

The HSR system was not designed for single ingredient foods, and in particular, single ingredient foods that cannot be reformulated to achieve a better nutritional profile and higher HSR. Despite this, edible oils are an included category within the current HSR system.



Designed for this

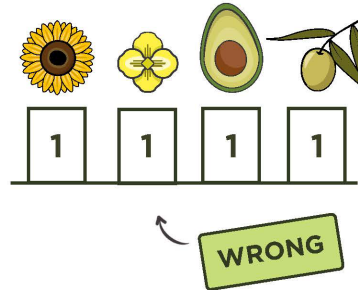
In contrast, other single ingredient foods such as salt and sugar are exempt from the HSR system.



not this

### 2. Alignment with dietary guidelines

The HSR system aims to align with the Australian Dietary Guidelines, which currently incorrectly rank sunflower oil, canola oil, EVOO and avocado oil as equally healthy.



### 3. Simplistic Scoring Algorithm

When it comes to extra virgin olive oil and the cooking oil category overall, the only component the calculator uses to determine the star rating is the energy and saturated fat content. Unfortunately, the system does not account for overall fatty acid profile, processing methods or minor compounds like biophenols.

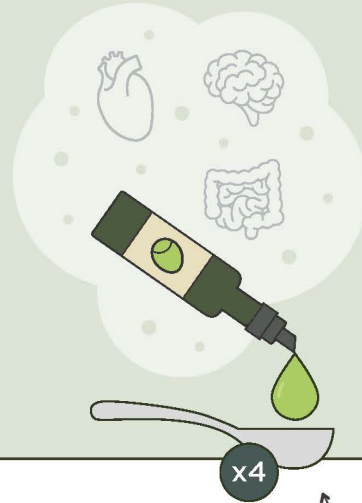
This leaves EVOO with a HSR of 3.5 stars, while other refined seed oils like canola oil score 4.5 stars due to a lower saturated fat content. This ranking does not reflect the evidence, which suggests extra virgin olive oil has a myriad of health benefits that can largely be attributed to the bioactive compounds like biophenols<sup>96</sup>.

The HSR system is a simple algorithm, and is not designed to take into account the total nutrient composition of a food and all its health benefits. Assigning a lower HSR to oils that have health benefits supported by strong scientific evidence could lead to consumer confusion and potentially impact health outcomes.

## Health Benefits Of Extra Virgin Olive Oil

Extra virgin olive oil (EVOO) has been widely used in the human diet for thousands of years, especially in the Mediterranean region. It has been long renowned for its many health-promoting properties. Modern science is uncovering how it is associated with a reduced risk of several chronic illnesses, including cardiovascular disease, hypertension, diabetes, obesity and some cancers<sup>69,70</sup>.

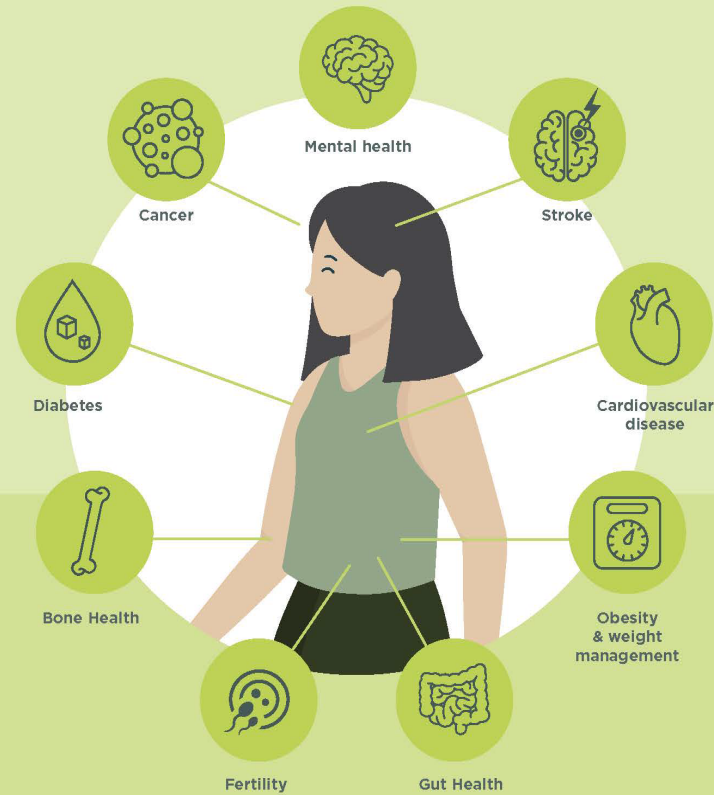
The fatty acid profile of EVOO and bioactive compounds with antioxidant and anti-inflammatory properties has been linked to protective effects against coronary, neurodegenerative, autoimmune and inflammatory disorders, as well as being anti-thrombotic and regulating blood pressure<sup>71-73</sup>.



### How Much EVOO to Consume to Achieve Health Benefits?

On average, 25 - 50ml of EVOO per day is most strongly associated with health benefits in healthy populations and those with risk factors including mild hypertension and overweight or obesity<sup>74-78</sup>. These studies have investigated EVOO as a food, rather than as part of a specific dietary intervention such as the Mediterranean diet.

Research from Australian Mediterranean diet interventions recommend **three to four tablespoons** (60 - 80ml) of EVOO per day, with good effect for pre-existing health conditions including coronary heart disease, type 2 diabetes and fatty liver disease<sup>79-81</sup>. The researchers found that even with higher dosage recommendations, lower end compliance was achieved (subjects consumed an average of two tablespoons at the end of 3-6 month interventions). This could indicate that higher recommendations are useful to ensure minimum beneficial amounts are consumed<sup>79</sup>.



*Note:* While this report is specifically about extra virgin olive oil, when referring to research studies below the term "olive oil" may be used if the researchers referred to it this way. It may not be possible to determine if the researchers used extra virgin olive oil in their studies or a different quality of "olive oil".

# Cooking With Extra Virgin Olive Oil

## Health Benefits of Cooking With EVOO

Studies show that cooking with extra virgin olive oil (EVOO) can increase the nutrient content of food. When cooking with any oil, there is an exchange between the food and the oil, and many foods that are cooked in EVOO will contain a higher proportion of monounsaturated fats than the original food<sup>175</sup>. In addition, EVOO reacts with the cooked food to produce new compounds and enriches it with different constituents such as antioxidants from EVOO that transfer to the cooked food<sup>176</sup>. One study showed that when broccoli was cooked with sunflower oil or refined olive oil, several beneficial compounds in the broccoli (such as vitamin C) were reduced. However, when cooked in EVOO, the levels of those beneficial compounds remained unchanged<sup>177</sup>. **In addition, EVOO can enhance nutrient bioavailability from plant cell walls that are broken during the cooking process<sup>178</sup>.**

The EVOO antioxidants that protect heated oil from thermal oxidation have a similar effect on cooked food. For example, canned tuna, being rich in polyunsaturated fatty acids, is highly prone to oxidation. However, this is inhibited if EVOO is used in the canning process<sup>179</sup>. In a similar study, cod was significantly protected from lipid oxidation when fried in EVOO, an effect not observed in salmon, which as a fatter fish absorbs less oil<sup>180</sup>.

## Extra Virgin Olive Oil is Highly Stable When Heated

Due to its high levels of monounsaturated fatty acids, phenolic compounds and other antioxidants, EVOO undergoes less degradation during cooking than other edible oils. Studies have also shown that canola and sunflower oils are more likely than EVOO to break down and form potentially harmful compounds (known as polar compounds) during cooking, which is attributed to the production method used to produce these oils, as well as the polyunsaturated fat content<sup>181-183</sup>.

*Did you know?*  
EVOO undergoes less degradation during cooking than other edible oils.



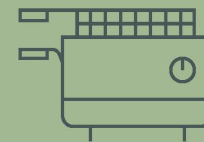
## MYTH BUSTER: “Smoke Point” and its Impact on Cooking

There is a common myth that extra virgin olive oil (EVOO) cannot be used for high temperature cooking, due to its lower smoke point compared to some other cooking oils. Smoke point is the temperature at which an oil begins to smoke, usually seen as bluish smoke and would indicate chemical breakdown<sup>184</sup>. **This myth is not supported by any published evidence and smoke point does not predict when an oil starts to lose stability.** On the contrary, oxidative stability of oils and the production of by-products when cooking oils are heated has a greater impact on cooking performance and health impact, as opposed to smoke points. EVOO is considered one of the best oils for frying, as it is rich in more stable monounsaturated fatty acids and low in unstable polyunsaturated fatty acids, and because its antioxidant compounds exert a protective effect against degradation during cooking<sup>185-188</sup>.

EVOO is a highly heat stable oil. In a 2018 study, ten of the most commonly used cooking oils were selected from the supermarket and heated in two different trials. In the first trial, all ten oils were heated for about 20 minutes until they reached 240 degrees Celsius. In the second trial, the oils were heated for six hours in a deep fryer to 180 degrees Celsius - the standard deep-frying temperature. Both these tests are well above regular home cooking conditions. In both tests, EVOO displayed the greatest oxidative stability, producing lower levels of polar compounds (harmful products produced when edible oils are heated), trans fats and other by products when compared with other cooking oils with higher smoke points like canola and sunflower oil<sup>189</sup>.

**This study reaffirmed that smoke point is not a good indicator of how stable an oil is when heated.**

It also supports the evidence for the heat stability and health benefits of cooking with EVOO<sup>187-190</sup>.



6 hours  
180°C



20 minutes  
240°C

## Tips to Add EVOO to Every Day Meals

Extra virgin olive oil (EVOO) is extremely versatile and can be used in so many sweet and savoury dishes across all meals and snacks throughout the day. These tips can encourage everyone to enjoy more EVOO in their diets and consume the recommended minimum amount of 2-3 tablespoons a day to reap the health benefits.

<p><b>Cook seasonal vegetables with EVOO</b>, which will not only enhance the flavour of the vegetables, but will also help to increase nutrient bioavailability. A good rule of thumb is to use one tablespoon of EVOO for one cup of vegetables</p>	<p><b>Swap butter</b> for a mild flavoured EVOO in baking. One teaspoon/cup of butter can be replaced with 3/4 teaspoon/cup of EVOO</p>
<p><b>As an alternative to butter or margarine</b>, spread EVOO across a favourite bread when making a sandwich, or simply dip a crusty sourdough baguette in a bowl of EVOO for a classic starter to any meal</p>	<p><b>For a healthy sweet snack</b>, dress fresh citrus fruit slices with a mild flavoured EVOO and dust with cinnamon</p>
<p><b>Replace commercial salad dressings</b> with a homemade dressing of EVOO, lemon juice, crushed garlic and fresh or dried herbs</p>	<p><b>Make silky scrambled eggs</b> by gently whisking EVOO into eggs instead of milk</p>
	<p><b>EVOO is a perfect base ingredient</b> in marinades for a variety of meats and seafood.</p>

## How To Store Extra Virgin Olive Oil

The amount of bioactive compounds in EVOO is directly proportional to its ability to resist degradation. To ensure the quality and health benefits of EVOO are preserved for as long as possible, it's essential to store EVOO in optimal conditions in order to maintain its quality. Oxygen, temperature, light and time are the four key factors that impact EVOO's quality. Packaging material also impacts quality as it effects how much light exposure occurs.

In general, the shelf life of EVOO is between 9 to 18 months unopened, depending on other factors such as chemical composition and storage temperature<sup>13</sup>. Once a bottle of EVOO has been opened and therefore exposed to oxygen, it is best to use the bottle within one to two months to maintain quality and freshness of the oil.

**TIP:** An oil is no longer considered 'extra-virgin' if you can taste rancidity, mustiness or winey-vinegar-ness or the oil coats the mouth rather than having a crisp clean feel<sup>15</sup>.

**TIP:** Always store EVOO in tightly sealed containers and place it in a cool, dark place away from heat or light.

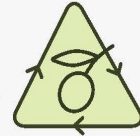
**TIP:** To best preserve EVOO quality and retain nutrient benefits, choose EVOO that is sold in dark glass or cans.



COOKING WITH EXTRA VIRGIN OLIVE OIL

## Sustainability

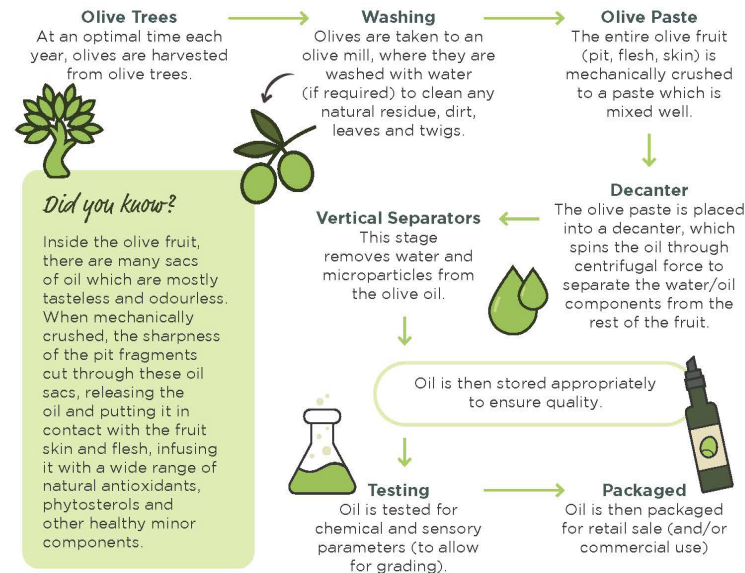
From a sustainability perspective, EVOO is highly favourable to all other edible oils when comparing quantifiable targets for sustainable food production, and is the only mainstream cooking oil to act as a carbon sink.



### How is EVOO Produced?

Extra virgin olive oil (EVOO) is produced from an evergreen perennial crop, which is highly efficient in the use of water, as well as fertilisers. Olive trees originated in warm conditions and are relatively hardy, they can tolerate dry conditions, low water conditions and droughts. Olive trees can survive dry conditions without dying and will recover once more water is available, but the quality of the fruit will be affected. When directly compared to other crops, olive trees need 30% less water through irrigation than the benchmark crop (close cut grass)<sup>196,197</sup>.

The by-products of EVOO production have a number of uses. Pit, pomace and organic materials from tree pruning can be used as fertilisers, animal feed and even renewable energy. Olive leaf extract is also marketed as a supplement<sup>198</sup>.



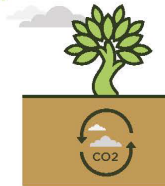
## The Impact of EVOO Farming on The Environment

Research shows EVOO production plays an important role in capturing atmospheric carbon dioxide and fixing it in the soil<sup>199-205</sup>. Olive trees act as a carbon sink, meaning they trap more carbon from the atmosphere than they release<sup>206</sup>.

The ability to fix carbon varies from olive grove to olive grove, however the International Olive Council has estimated that producing one litre of EVOO captures an average of 10.65 kg of carbon dioxide (CO<sub>2</sub>) from the atmosphere. **One hectare of the average olive grove neutralises the annual carbon footprint of a person.**

In other words, the worldwide olive industry absorbs the emissions of a city of 9 million people every year<sup>21</sup>. In contrast, global refined oil production has a negative net effect on atmospheric CO<sub>2</sub><sup>207, 208</sup>.

**Extra virgin olive oil is the only mainstream cooking oil to act as a carbon sink, which is better for the environment.**



## EVOO and Sustainable Dietary Patterns

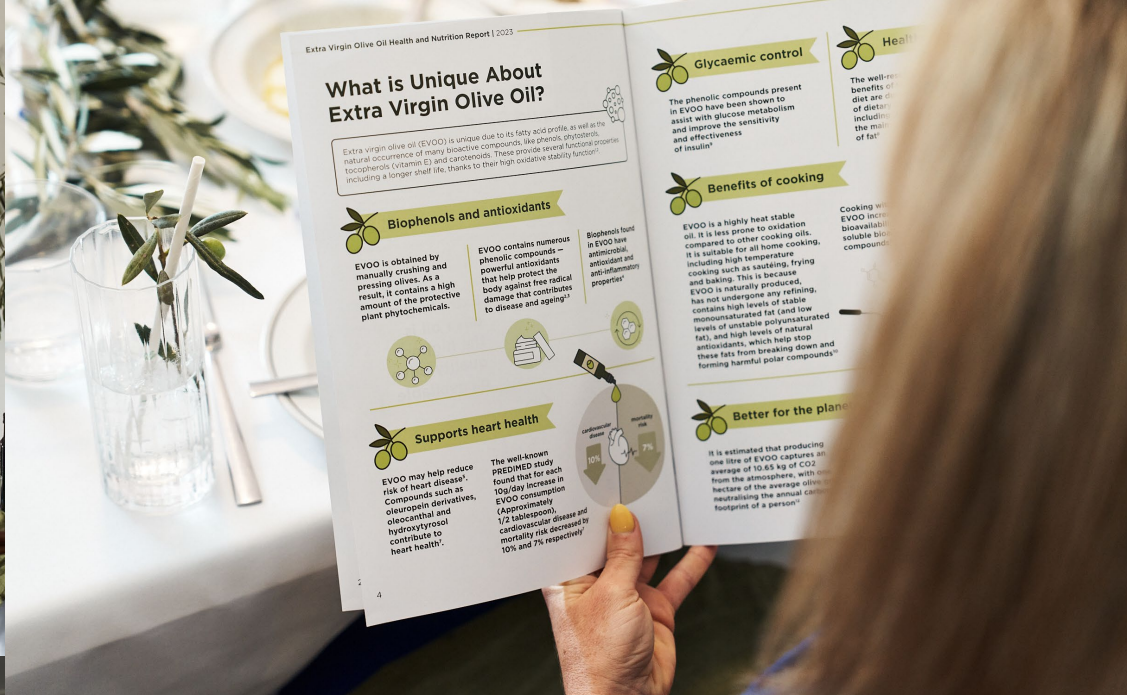
Sustainability and planetary health are increasingly important considerations for public health dietary recommendations and guidelines. EVOO is a desirable source of unsaturated and saturated fat from a sustainable food production perspective.

The well-publicised EAT-Lancet report includes recommended volumes of different foods each day, based on extensive literature on foods, dietary patterns, and health outcomes. Within these guidelines, unsaturated plant oils are a prominent feature, with a recommendation of 20-80g per day<sup>209</sup>.

The Mediterranean diet is similar to the EAT-Lancet report reference diet, with a focus on unprocessed plant foods, moderate consumption of fish and low consumption of meat, dairy and animal fats. EVOO is the main source of fat in the Mediterranean diet and has been shown to facilitate vegetable and legume consumption, both prominent features of the EAT-Lancet reference diet<sup>210</sup>.

In conclusion, **extra virgin olive oil is recognised as one of the world's healthiest and most popular cooking oils.** It has a unique chemical composition that provides a myriad of health benefits from heart health, mental health, brain function, gut health, and diabetes and weight management. All it takes is just 2-3 tablespoons or about 50ml per person each day. EVOO is an excellent replacement for less healthy fats and can be used in many savoury and sweet dishes. With a variety of different flavour profiles, there's an EVOO to suit all culinary styles.









# Australian Dietary Guidelines Update

# Australian Guide to Healthy Eating

Enjoy a wide variety of nutritious foods from these five food groups every day.  
Drink plenty of water.



Use small amounts



Only sometimes and in small amounts



## GUIDELINE 3

**Limit intake of foods containing saturated fat, added salt, added sugars and alcohol.**

- Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks.
  - Replace high fat foods which contain predominately saturated fats such as butter, cream, cooking margarine, coconut and palm oil with foods which contain predominately polyunsaturated and monounsaturated fats such as oils, spreads, nut butters/pastes and avocado.
  - Low fat diets are not suitable for children under the age of 2 years.
- Limit intake of foods and drinks containing added salt
  - Read labels to choose lower sodium options among similar foods.
  - Do not add salt to foods in cooking or at the table.
- Limit intake of foods and drinks containing added sugars such as confectionary, sugar-sweetened soft drinks and cordials, fruit drinks, vitamin waters, energy and sports drinks.
- If you choose to drink alcohol, limit intake. For women who are pregnant, planning a pregnancy or breastfeeding, not drinking alcohol is the safest option.

# What we would like to see



1. Healthy fats and oils to be recognised as an important core food group and their daily consumption as part of a healthy eating pattern to be encouraged
2. EVOO to be referred to as the best example of a healthy oil

# Review process





# Thank you!

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