

Relationship between colour and aroma of olive oil and nutritional content

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Background - Olive oil contains some minor constituents including, characteristic phenolic compounds which contribute to the stability of the oil, antioxidant properties, lipoxygenase activity inhibition and microbial activity.

Objective – To determine differences between olive and sunflower oils in regards to nutrient/phytochemical concentration, and to correlate these factors with the colour and aroma of the oils.

Design - This study investigated 13 oils in relation to their aroma, colour and nutritional qualities. The oils included extra virgin olive oil, light olive oil and sunflower oil. The phenolic compound, carotenoid, vitamin E and fatty acid composition was measured. These parameters were compared and correlated to the colour measures (L^*a^*b) and electronic nose responses for each oil.

Outcomes – Two Australian extra virgin olive oils contained the highest concentration of phenolic compounds, including oleuropein aglycone ($P < 0.05$). Imported olive oils contained the highest β -carotene concentration compared with local oils ($p = 0.002$). Chroma (b^*) was significantly related to lutein and zeaxanthin concentrations ($R^2 = 0.756$, $P = 0.003$). The responses of three electronic nose sensors (LY/LG, LY/G, LY/AA) significantly correlated with oleuropein aglycone concentrations ($P < 0.02$).

Conclusions- These results have implications for food processors and consumers who wish to choose oils that have high phytonutrient content: Oils that are high in phenolic compounds and lutein/zeaxanthin can be readily identified, by using aroma and colour measurements.