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COMPARISON OF FATTY ACID CONTENT IN *CAMELLIA OLEIFERA* (L.) KUNTZE OIL AND OLIVE OIL BY GC

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Abstract

The comparison of fatty acid content in *Camellia oleifera* (L.) Kuntze oil and olive oil was done by GC. *C. oleifera* oil contained more C18:1n9c, C18:2n6c, C20:1 and C22:1n9 than olive oil. Olive oil did not contain C21:0 and C24:1 but more C8:0, C16:0, C16:1, C18:0, C18:3n6, C18:3n3, C20:2, C22:0, C23:0 and C24:0 than *C. oleifera* oil, *C. oleifera* oil did not contain C20:2. *C. oleifera* oil and olive oil are beneficial for human health for their unsaturated fatty acids content and *C. oleifera* oil is healthy than olive oil.

Camellia oleifera (L.) Kuntze (Fam. Theaceae) oil is often called eastern olive oil for the high contents of unsaturated fatty acids, e.g., oleic and linoleic acids which are beneficial for human health (Ma *et al*. 2011). In the present study fatty acid in *C. oleifera* oil and olive oil has been determined and compare to judge their beneficial effect as healthy food.

C. oleifera oil "Jinmu" from China and olive oil "Abrui" from Spanish were bought in Chaoshifa supermarket. The method of detection: Prepared fatty acid methyl ester by three boron fluoride method, determined the concentration of fatty acids by gas chromatography with capillary column and flame detector (National Standard of the People's Republic of China 2008).

C. oleifera oil contained more C18:1n9c, C18:2n6c, C20:1 and C22:1n9 than olive oil, especially *C. oleifera* oil contained C21:0 and C24:1, but it was not detected in olive oil. Olive oil contained more C8:0, C16:0, C16:1, C18:0, C18:3n6, C18:3n3, C20:2, C22:0, C23:0, C24:0 than *C. oleifera* oil; Olive oil contained C20:2, but it was not detected in *C. oleifera* oil (Figs 1-2, Table 1).

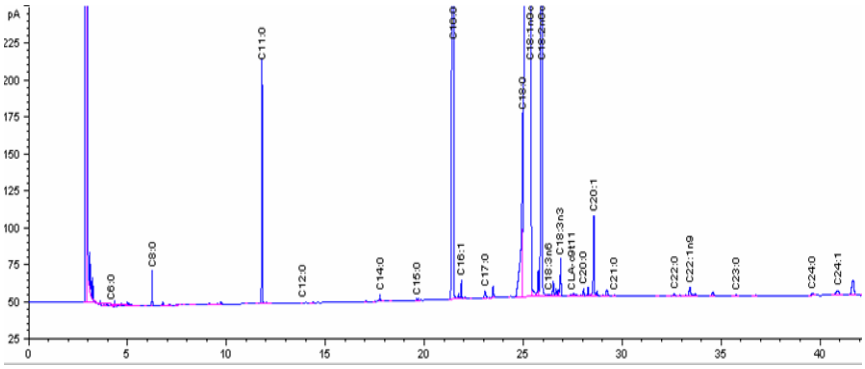

Fig. 1. Gas chromatogram of *C. oleifera* oil.

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The results showed that *C. oleifera* oil and olive oil contained large number of unsaturated fatty acids than soybean oil and rape oil (Ma *et al.* 2011), which proved that *Camellia oleifera* oil and olive oil are beneficial for human health (Table 2).

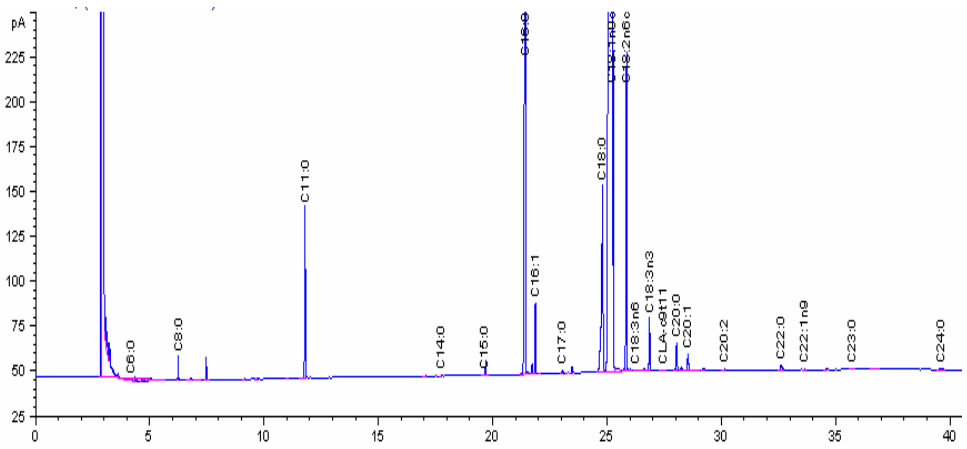

Fig. 2 Gas chromatogram of olive oil.

Table 1. The concentration of fatty acids in *C. oleifera* oil and olive oil (mg/g).

Fatty acids	Olive oil	*Camellia oleifera* oil
C6:0	0.10	0.05
C8:0	1.51	1.05
C10:0	0.17	0.15
C12:0	0	0.03
C14:0	0.11	0.33
C15:0	0.04	0.07
C16:0	95.25	74.51
C16:1	7.07	0.87
C17:0	0.42	0.68
C18:0	33.85	20.25
C18:1n9c	729.62	736.42
C18:2n6c	36.89	71.80
C18:3n6	0.27	0.03
C18:3n3	5.45	2.42
CLA-c9t11	0.08	0.06
C20:0	3.56	0.44
C20:1	2.20	5.17
C21:0	0	0.05
C20:2	0.13	0
C22:0	1.01	0.19
C22:1n9	0.07	0.95
C22:2	0	0
C23:0	0.23	0.07
C24:0	0.46	0.35
C24:1	0	1.10

C. oleifera oil contained more C18:1n9c, C18:2n6c, C20:1 and C22:1n9 than olive oil, olive oil do not contain C21:0 and C24:1. Olive oil contained more C8:0, C16:0, C16:1, C18:0, C18:3n6, C18:3n3, C20:2, C22:0, C23:0, C24:0 than *C.oleifera* oil, *C. oleifera* oil does not contain C20:2.

Table 2. The concentration of saturated fatty acids and unsaturated fatty acids in *Camellia oleifera* oil and olive oil (mg/g).

Fatty acids	Olive oil	*Camellia oleifera* oil
Saturated fatty acids	136.71	98.22
Unsaturated fatty acids	781.78	818.82

C. oleifera oil and olive oil contained many unsaturated fatty acids and so *C. oleifera* oil and olive oil may be considered beneficial for human health. As far the unsaturated fatty acids concerned *C. oleifera* oil is healthier than olive oil.

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