

Introduction

Zanthoxylum chalybeum (Family Rutaceae) is one important medicinal plant used in tropical Africa as a food spice and traditional medicine. Although aromatic leaves, shoots and fruits of *Z. chalybeum* have been used as a food spice, information of nutritional and chemical characteristics of the fruits has not been documented.

Objectives

This study evaluated the essential oils and fatty acid profiles of the epicarp and the seeds of *Z. chalybeum* fruit.



Figure 1: Fruit of *Z. chalybeum*

Methodology

Fresh fruits of *Z. chalybeum* were harvested and dried. The seeds and epicarp separated from the fruit were crushed into powder.

The powders (seeds & epicarp) were hydro-distilled to extract essential oils which were profile with GC-MS n- hexane was used to extract both powders to obtain fixed oils which were analyzed with GC-MS as methyl ester to determine their fatty acid profile .

Results and discussion

The epicarp and seed (8.7%) being the powders had essential oil yields of 1.3% and 0.0% respectively. The number of components identified in the epicarp were 28 with limonene (18.7%), caryophyllene oxide (12.1%) and aromandendrene most dominant (Table 1).

The totals fats epicarp and seed powders were 12.1% and 53.8%, respectively. The dominant fatty acids found in the epicarps were linoleic acid (83.9%) and oleic acid (10.2%) while those in the seed were oleic (69.1%) and palmitic acid (29.1%) (Figure 2).

Table 1: GC-MS profile of essential oil in the epicarp of *Z. chalybeum*

S/N	RETENTION TIME	COMPOUND	CAS	Formula	RI(DIMS)	PEAK AREA%
1	3.457	Limonene	138-86-3	C10H16	1023.7	18.66
2	7.640	Aromandendrene	489-39-4	C15H24	1439.0	8.70
3	8.205	Alloaromadendrene	25246-27-9	C15H24	1459.1	6.49
4	9.224	Eudesma	119120-23-9	C15H24O	1675.8	6.03
5	9.267	Germacrene	23986-74-5	C15H24	1475.9	6.72
6	10.763	Caryophyllene oxide	1139-30-6	C15H24O	1570.0	12.13

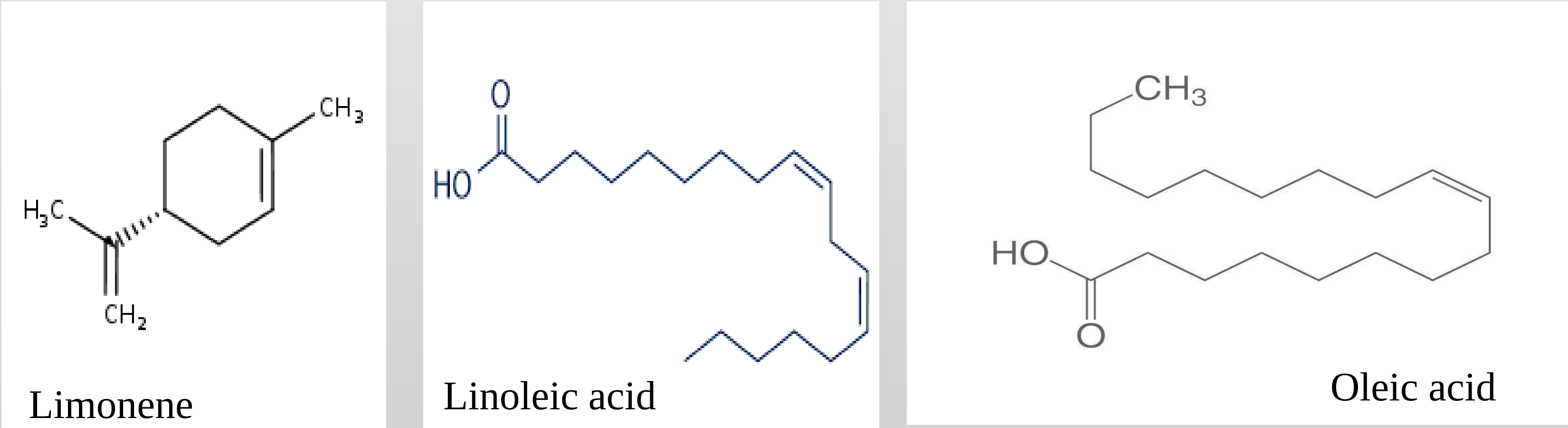
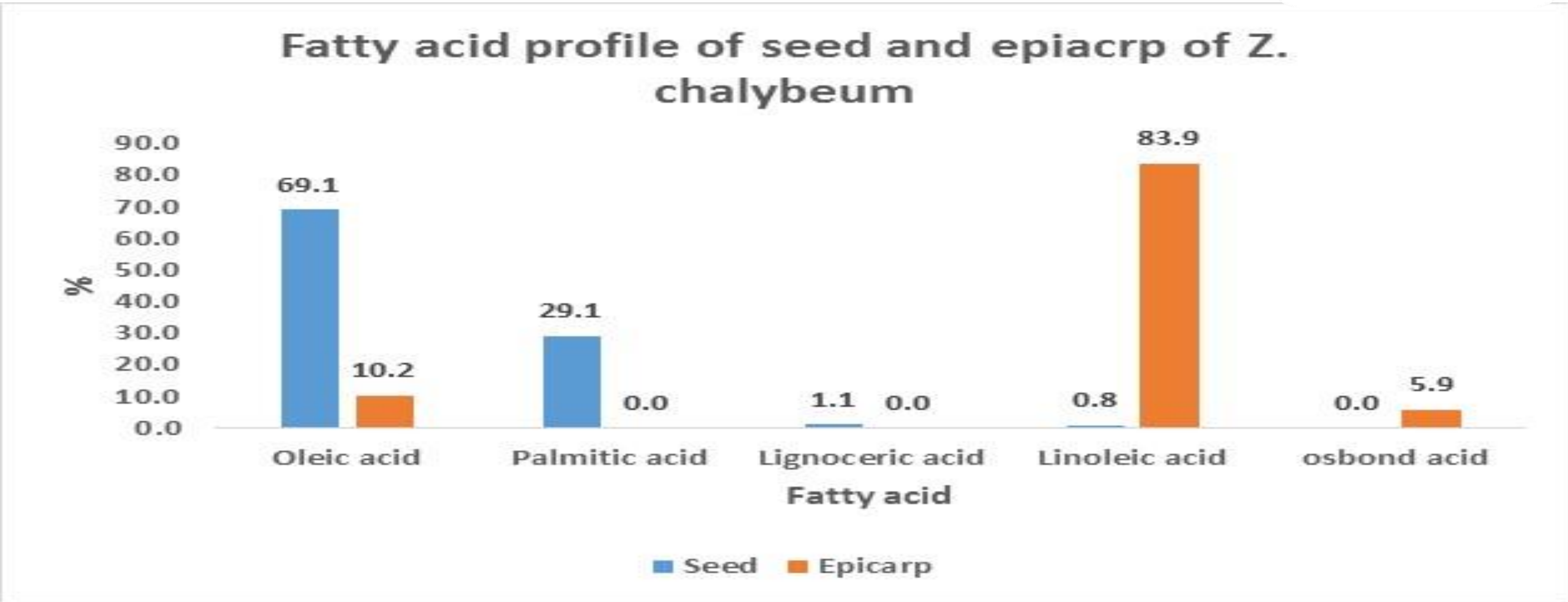


Fig 2: Fatty acid profile in the epicarp and seeds of *Z. chalybeum*

Conclusion

The seeds of *Z.chalybeum* contain a high oil yield content while its epicarp is rich in essential oils making them as good source of vegetable oil and food fragrance respectively.

The essential oil compounds like limonene, caryophyllene oxide and aromandendrene have biological activities essential for human health.

The fatty acids in both epicarps and seeds like linoleic acid, oleic acid and palmitic acid are unsaturated oils that play significant role in human body.

Therefore, *Z.chalybeum* fruits should be promoted edible vegetable oil and natural fragrance for industrial applications respectively.

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References

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