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BIOLOGICAL STUDIES ON THE ACTIVE COMPOUNDS OF *ERIOBOTRYA JAPONICA* L. BY USING THE GAS CHROMATOGRAPHY TECHNIQUE GC-MS

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ABSTRACT : There are fifty - one of phytochemical compounds are identified in the methanol extract of seed peel of *Eriobotrya japonica* L. The identification process was based on its chemical structures, exact mass, and the calculated time from injection to detection which is called retention time. GC-MS assay of *Eriobotrya japonica* L. had been identified several of compounds such as : 5-Hydroxymethyl-2-furaldehyde ; 4-Fluorobenzyl alcohol; 5-Ethyl-1,4-dimethyl-2-pyrazoline; 4-Mercaptophenol; Methyl 10-methylundecanoate; Methyl dodecanoate; Ethyl 7-oxooctanoate; Succinic acid, ethyl 2-(2-methoxyethyl) heptyl ester; Succinic acid, ethyl octyl ester; Methyl 12-methyltridecanoate; 3-Methylmannoside; Butanoic acid; (2,2-dimethy1-5-[2-(2-trimethylsilylethoxy)propy][1,3]dioxolan-4-yl] methanol; Propanedioic acid; ethyl methyl ester; 3,4-o-isopropylidene-d-galactose; Glutaric acid; Hexadecanoic acid; n-hexadecanoic acid; Octadcanoic acid; 9-octadecenoic acid; Methyl stearate; Oleic acid; 1-pentadecanol acetate; Tetracosanoic acid; Undecanoic acid; sorbitol; z-(13,14-epoxy)tetradec-11-en-1-olacetate; Alpha, beta.-gluco-octonic acid lactone; Methyl 17-methyl-tetracosanoate; Tetradecanoic acid; Urs-12-en-24-oic acid; 3-oxo-methyl ester; Beta- amyrin; Urs-12-en-3-ol acetate,(3.beta); 12-oleanen-3-yl acetate; 5(1H)-Azulenone; 1-Hydroxypyrene; 7-oxabicycle[4.1.0] heptane; Tricosanoic acid; Phthalic acid; silane; i-propyl 11octadecenoate; i-propyl 9octadecenoate; cyclononasiloxane; Hexasiloxane tetradecamethyl; nonacosane; Tetracosane; Dodecanoic acid,1,2,3-propanetriyl ester; benzamide; Fumaric acid. The plant contains many biologically active agent that may be used as Antimicrobial factor , anti-inflammatory, Antioxidant, Anticancer, insect control and many other uses.

Key words : Active compounds, insect control, antioxidant, anticancer.

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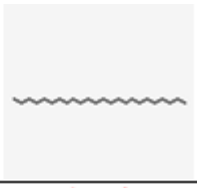
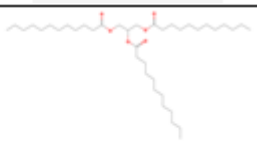
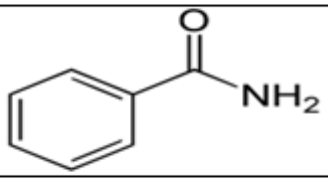
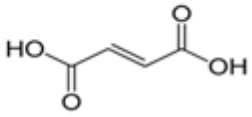
INTRODUCTION

The *Eriobotrya japonica* L. plant is one of the common and well-known plants of several subtropical countries, including China in the first place, Japan, Italy and Spain, as well as in Brazil and India. This plant is belonging to the Rosaceouse family, it has many advantages by having a green tree with delicious fruits that taste between white and red in addition to the orange color (Rajalakshmi *et al*, 2017). This tree has an ancient medical history that extends for hundreds of years, especially in China and other places of the world such as Spain, Pakistan and Turkey, they used it to treat various cases such as Cancer, infections and others (Baljinder *et al*, 2010). Moreover, the tree is characterized to be suitable with temperatures of subtropics at a rate of 20 ° C. Studies have shown that the seeds of the lower lacquer plants are significantly important in preparing solutions as well as different medications because of those trees are enriched with many essential compounds, like proteins, carbohydrates and fats, in addition to the secondary metabolites such as phenolic compounds (Choi *et al*, 2011). The plant is proposed as an important source of antioxidants due to the highly content of phenolic compounds (Delfanian *et al*, 2015; Singh *et al*, 2012). These phenolic and flavonoid compounds are synthesized in different portions of the plant, such as leaves, flowers, fruits and seeds (Zhang *et al*, 2015). However, phenolic compounds are considered as one of the largest groups that are generated as secondary metabolites in plants, including the worldly Link plant (Sareh *et al*, 2019). Many studies have been done with different ways conducted in different parts of this plant to detect the phenolic compounds and identify their significance in humans

Table 1 continued...

48	Tetracosane	23.565	338.7 g/mol	
49	Dodecanoic acid,1,2,3-propanetriyl ester	28.158	200.32 g/mol	
50	benzamide	28.380	121.139 g/mol	
51	Fumaric acid	28.486	116.07 g/mol	

References

Rajalakshmi P, Pugalenthi M, Subashini G, Kavitha M and VishnuKumar S (2017) Nutraceutical studies on *Eriobotrya japonica* (Thunb.) Lindl. (fruits and seeds). *Int. J. Adv. Scientific Res.* **3**(4), 44-48.

Baljinder S, Seena G, Dharmendra K, Vikas G and Bansal P (2010) Pharmacological potential of *Eriobotrya japonica*- An overview. *Int. Res. J. Pharmacy* **1**, 95-99.

Choi Y G, Seok Y H, Yeo S, Jeong M Y and Lim S (2011) Protective changes of inflammation-related gene expression by the leaves of *Eriobotrya japonica* in the LPS-stimulated human gingival fibroblast: Microarray analysis. *J. Ethnopharmacol*. **135**, 636–645.

Delfanian M, Esmaeilzadeh Kenari R and Sahari M A (2015) Antioxidative effect of loquat (*Eriobotrya japonica* Lindl.) fruit skin extract in soybean oil. *Food Sci. Nutr*. **3**(1), 74-80.

Zhang W N, Zhao X Y, Sun C D, Li X and Chen K S (2015) Phenolic composition from different loquat (*Eriobotrya japonica* Lindl.) cultivars grown in China and their antioxidant properties. *Molecules* **20**, 542–555.

Zhou C H, Chen K S, Sun C D, Chen Q J, Zhang W S and Li X (2007) Determination of oleanolic acid, ursolic acid and amygdalin in the flower of Eriobotrya japonica Lindl. by HPLC. *Biomed. Chromatogr*. **21**, 755–761.

Sareh H, Hossein H and Barzegar J (2019) Evaluation of fatty acid profile of mesocarp and seed of loquat (*Eriobotrya japonica* L.) Mohammad. 2nd International and 6th National Conference of Organic vs. Conventional Agriculture At: Ardabil, Iran. p 1-4.

Shaheed K A, AlGaraawi N I , Alsultany A K , Abbas Z H, Khshayyish I K and Al khazali M T (2019) Analysis of bioactive phytochemical compound of (*Cyperus iria* L.) by using gas chromatography–mass spectrometry. *IOP Conf. Ser.: Earth Environ. Sci.* **388**(1), 012064.

Zar P P K, Morishita A, Hashimoto F, Sakao K, Fujii M, Wada K and Hou D X (2014) Anti-inflammatory effects and molecular mechanisms of loquat (*Eriobotrya japonica*) tea. *J. Funct. Foods* **6**, 523–533. doi: 10.1016/j.jff.2013.11.019.

O'Neil M J (2013) The Merck index - An Encyclopedia of chemicals, drugs and biologicals. Cambridge, UK: Royal Society of Chemistry, p. 1628.

Kim M, You M, Rhyu D, Jeong K, Kim Y, Baek H and Kim H (2011) Oral administration of loquat suppresses DMBA-induced breast cancer in rats. *Food Sci. Biotechnol.* **20**, 491–497. doi: 10.1007/s10068-011-0068-8.