

PERSEA AMERICANA MILL: A REVIEW OF AVOCADO OIL AND ITS SKINCARE BENEFITS

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ABSTRACT

Persea Americana Mill, commonly known as Avocado belonging to the family lauraceae and originated from Mexico and Central America. Worldwide, avocados made an estimated 8,978,275 metric tonnes globally by 2022 with a rise of 4.8% from 8,570,284 tonnes by 2021. Avocado has a great amount of oil content in comparison to other fruit. Avocado oil is highly rich in monounsaturated fatty acids and a good source of bioactive compounds, namely tocopherols, carotenoids, and phenolic compounds. avocados have been used for various purposes, such as medicinal, culinary, dermo-cosmetic applications, and others. Hence In this review paper we discuss relevant information about avocado fruit and its composition and also its production throughout the world. This review highlights and focuses on the important pharmacological uses of avocado oil in skin related disorders like sunburn, skin inflammation, eczema, psoriasis and topical formulations of avocado oil.

KEYWORDS: avocado, medicinal, dermo-cosmetic, sunburn, eczema, psoriasis.

INTRODUCTION

The word avocado comes from the Aztec word “ahuacatl”, which has been turned into ‘ahuacate’ or ‘aguacate’ through Spanish influence.^[1,2] *Persea Americana Mill*, commonly known as avocado, is a flowering plant belonging to the Lauraceae family, genus *Persea*, and originated in Mexico and Central America, and lately because of its health properties to human beings, it has gained global acceptance and popularity.^[3,4] There are more than 150 species of genus *persea* out of which 70 species grow in warm regions of America.^[2]

The low levels of self-pollination cause avocados to have very low levels of homogeneity, leading to a long juvenile stage. Avocado cultivars can either be type A or B depending on their flowering behaviour, and the flowers are also biologically female or male. Still, the kind A acts as a female component during the morning making kind B the afternoon female involving two pollination days.^[2,5]

Avocado trees are generally tall, evergreen, bushy and of good composition. They are found in most tinier states in the middle highlands of Mexico, where there are sporadic frosts, to the lowland tropical forests of Central and South America, where the annual high temperatures are in excess of 20°C and there are no frosts but even if so there is little wind to ensure that it is always adequately humid.^[6] Butter pear is what people usually call an avocado because of its pear-like shape and creamy texture pulp.^[2] The avocado is the most valuable fruit and one of the only ones in the family Lauraceae that are consumed. The avocado is a fruit that has been consumed and exported to other parts of the world. Furthermore, it is also known as *Laurus persea*, *Persea drimifolia*, *Persea floccosa*, *Persea gigantea*, *Persea leiogyna*, *Persea nubigena*, *Persea paucitriplinervia*, and *Persea steyermarkii* (PACSOA).^[7,8] According to the aforesaid qualities, demand arising from the need to use this fruit as food and medicine has seen avocado growing and exporting pick up significantly in the last few years.^[2,9]

Oil extracted from other fruits differs from the one obtained from the avocado fruit in that the extraction of the oil is mostly from the mature fruit flesh^[10] and its lipid content is said to surpass any other type of fruit or vegetable produce ever known.^[11-14] A study of creating anti-wrinkle topical cream with topical application over 12 weeks showed that applying saffron extract and avocado oil can significantly minimize the size and volume of nasolabial folds alongside an increase in skin elasticity.^[15,16]



Fig. 1: *Persea americana* mill.

METHODOLOGY

We conducted a systematic search of electronic databases including PubMed, Elsevier, Google Scholar, Medline, Scopus, and Science Direct. For inclusion in this review, we chose only human original articles without a limit on publication date. The following search terms were utilized: avocado, composition, biological significance of avocado oil, topical formulations, worldwide production and their blends in English.

Worldwide production

Avocado production and exportation have increased in recent years as its demand for food and its medicinal use has become paramount.^[2,9] It is worth noting that avocados are available year-round, and the Hass variety is the most dominant in the international market because it has quality features, which makes it more productive, resistant to diseases and pests, and available throughout the year.^[2,17]

Worldwide, avocados made an estimated 8,978,275 metric tonnes globally by 2022 with a rise of 4.8% from 8,570,284 tonnes by 2021.^[18]

Composition

Avocados have lots of nutrients. These are such as carotenoids, monounsaturated fats, potassium and fibers that have been linked to reduced chances for chronic diseases especially if they form part of balanced healthy meal. An avocado has much more oil than any other kind of fruit. There are so many types of avocados. However, the most frequently grown type is the Hass avocado.^[19,20]

Numerous polyphenols are found in pulp, peel, seed, leaves among other wastes of the avocado tree.^[21] They are the main bioactive compounds in avocado. Carotenoids and tocopherols are present in the pulp but are absent in the other parts.^[22]

Table 1: Avocado fruit composition.^[23,24]

Component	Quantity
Water (%)	74.4
Lipids (%)	20.6
Proteins (%)	1.8
Fibre (%)	1.4
Ash (%)	1.2
Sugars (%)	0.30
Glucose	0.10
Fructose Sucrose	0.10

Organic acids (%)	0.32
Malic acid	0.05
Citric acid Oxalic acid	0.03
Vitamins (mg 100 g⁻¹)	11.0
Ascorbic acid	0.07
Thiamine	0.12
Riboflavin	1.9
Nicotinic acid Vitamin B6	0.62
Folic acid	0.04
Biotin	0.006
Carotenoids (mg 100 g⁻¹)	0.29
α -carotene β -carotene	0.03
cryptoxanthin	0.16
Minerals (mg 100 g⁻¹)	480
Potassium	27.0
Phosphorus	14.0
Calcium	23.0
Magnesium	2.0
Sodium Iron	0.7
Zinc	0.5

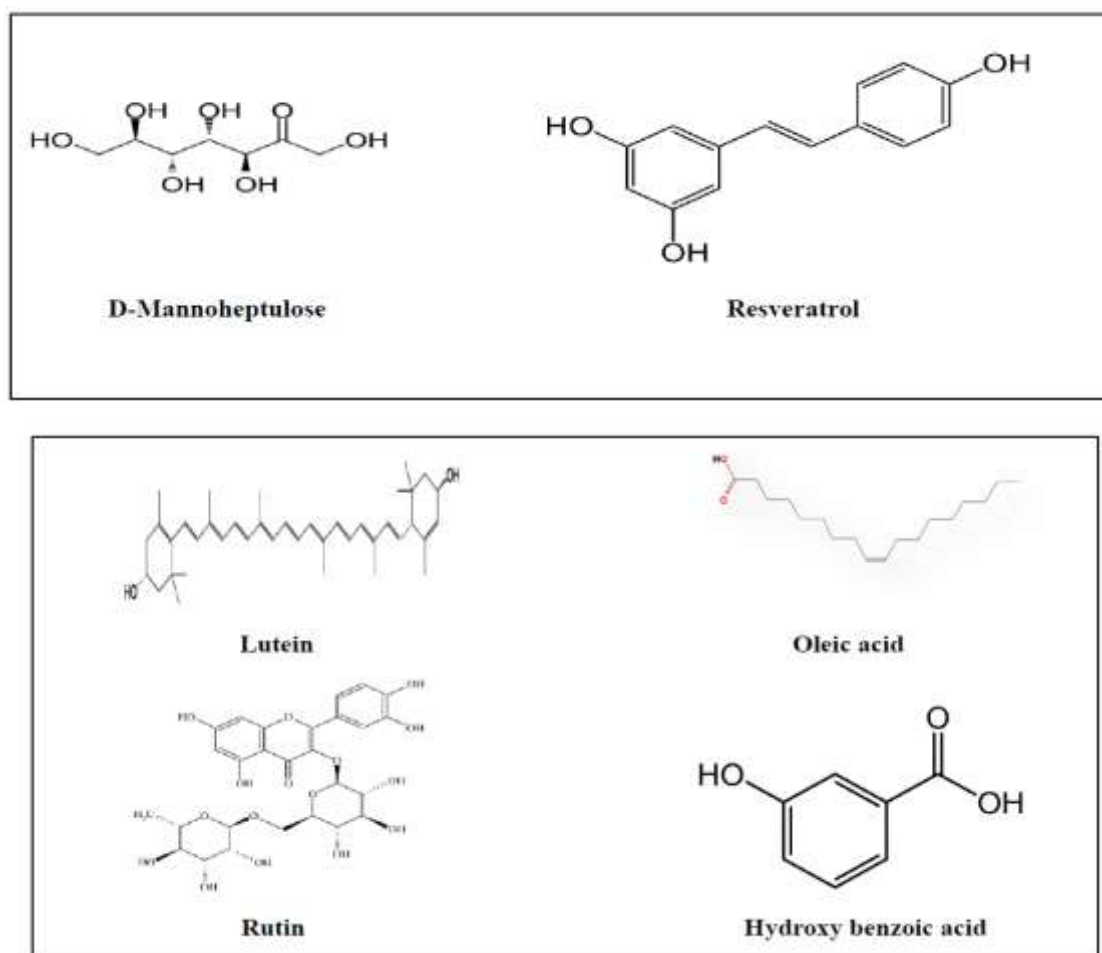


Fig. 2: Some of pharmacologically active constituents of avocado.^[25]

Biological role of avocado oil in skincare

Traditionally, avocados have been used for various purposes, such as medicinal, culinary, dermo-cosmetic applications, and others.^[26,27,28] Avocados have been traditionally used as folk medicine to relieve ulcers, as well as heart, skin disorders, hypertension, diabetes and herpesinfections.^[29-36]

- ❖ **Moisturizes and nourishes-** Avocado oil contains vitamins, potassium, and lecithin that penetrate the skin's outer layer (epidermis). These nutrients nourish and moisturize the skin and contribute to new skin cell growth.
- ❖ **Soothes redness caused by psoriasis and eczema -** Avocado oil contains antioxidants and vitamins that may help relieve dry, inflamed, and scaly skin caused by eczema and psoriasis. If you have these skin conditions, make sure to do a patch test before using avocado oil to avoid making your symptoms worse.
- ❖ **Helps stop acne and improves skin condition -** When applied briefly and washed off, avocado oil moisturizes the skin without leaving a greasy residue. This may prevent the chance of acne breakouts
- ❖ **Speeds up the healing of wounds -** Avocado oil has been found to help speed up wound healing. Research from 2013 found that the fatty acids found in avocado oil, such as oleic acid, can increase collagen production and promote the growth of new connective tissue. Additionally, these fatty acids can also help decrease inflammation while the body is healing.
- ❖ **Treats sunburned skin-**Avocado oil's antioxidants, including vitamin E, beta- carotene, and others, help calm sunburn symptoms. They support skin healing and soothing. In addition, consuming avocados can protect the skin from damaging UV rays.
- ❖ **Minimizes the appearance of aging -** One of the first signs of aging can often be seen on the skin. Research indicates that including nutritious fats in your diet, like the ones found in avocados, can improve the skin's flexibility and slow down the aging process, keeping it looking youthful for a longer period of time.
- ❖ **Improves nail health-** Although avocado oil is claimed to enhance nail health, scientific evidence supporting this claim is limited.
- ❖ **Enhances the overall health of the scalp -** Using avocado oil on your scalp as a hot oil treatment can help with dandruff and other problems caused by a dry, flaky scalp.^[45]

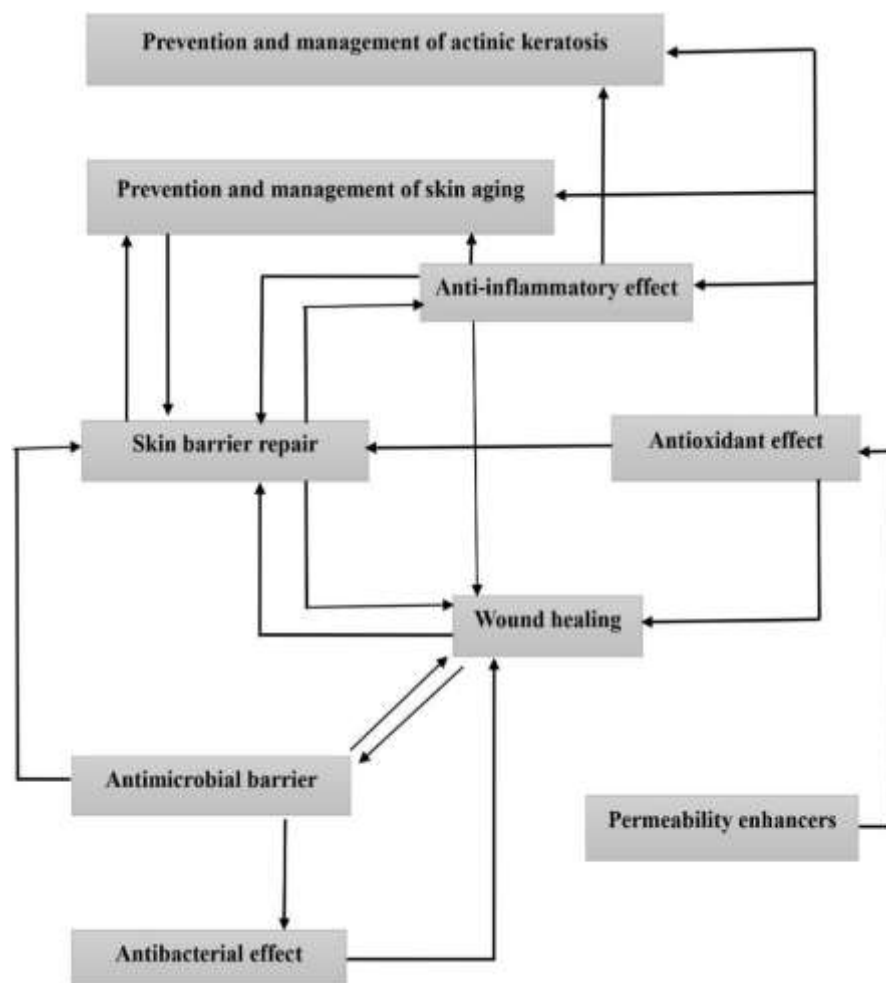


Fig. 3: Flowchart illustrating benefits of topical application of avocado oil.^[37]

Some Topical Formulations of avocado oil^[38-47]

Table 2: Topical Formulations of Avocado oil.

Sr. no.	Formulation	Application	References
1.	Cream	Anti-microbial activity	Ordu, J.I. and Jaja, G.O., 2018. Evaluation of Pulp Oil Persea Americana (Avocado Fruit) in Pharmaceutical Cream Formulation. <i>International J of Advances in Scientific Research and Engineering</i> , 4(5), pp.14-25
2.	Gel	Sunscreen activity	Yadav, Hemant & Usman, Shahnaz & Alabdin, Raghad & Ahmed, Halima & Usman, Hauwa. (2020). Formulation and Evaluation of Topical Gel Using Avocado Extract. <i>American Journal of Pharmacy And Health Research</i> . 8. 31-37. 10.46624/ajphr.2020.v8.i8.003.
3.	Ointment	Plaque Psoriasis	Stücker, M., Memmel, U., Hoffmann, M., Hartung, J. and Altmeyer, P., 2001. <i>Vitamin B12 ointment containing avocado oil in the therapy of plaque psoriasis</i> (No. 2001, 27).

			Technical Report.
4.	Soap	Antioxidant, antimicrobial	Hennessey-Ramos, L., Murillo-Arango, W. and Guayabo, G.T.,2019. Evaluation of a colorant and oil extracted from avocado waste as functional components of a liquid soap formulation. <i>Revista Facultad Nacional de Agronomía Medellín</i> , 72(2), pp.8855-8862.
5.	Gel cream	Antiaging	Srivastava, R.S. and Shah, K.P.,2015. Formulation and evaluation of novelherbal anti-ageing formulation (gelcream). <i>World Journal of Pharmaceutical Research</i> , 4(8),pp.2426-44
6.	Nano-emulsion hydrogel	Antiaging and moisturising agent	Mohamed Salama, M. and Ahmad Mustafa, M.E., 2013. Formulation and evaluation of avocado oil nanoemulsion hydrogels using sucrose ester laureate. <i>Advanced Materials Research</i> , 812, pp.246-249.
7.	Microemulsion	Maintaining Barrier functionof the skin	Ochiuz L and Hortolomei M(2017) Development of Microemulsion Dermal Products Based on Avocado Oilfor Topical Administration. Properties and Uses of Microemulsions. InTech. Available at: http://dx.doi.org/10.5772/66077 .
8.	Emulgel	Anti-acne	Shikha Baghel Chauhan. Formulation and Evaluation ofEmulgel for the treatment of Acne. <i>Research J. Pharm. and Tech.</i> 2020; 13(8):3598-3602. doi: 10.5958/0974- 360X.2020.00636.8
9.	Shampoo	Conditioning and cleaning	Roy, S.P., Deka, K., Mishra, P.K. and Rai, S.P., FORMULATION OF A NOVEL HERBAL BASEDSHAMPOO FOR HAIR.
10.	Hair oil	Hair care	Lourenço, C.B., Gasparin, R.M., Thomaz, F.M., da Silva, G.C., Martin, A.A., Paiva- Santos, A.C. and Mazzola, P.G.,2024. Impact of Hair Damage on the Penetration Profile of Coconut, Avocado, and Argan Oils into Caucasian Hair Fibers. <i>Cosmetics</i> , 11(2), p.64

CONCLUSION

Avocado fruit is outstanding for its high content of monounsaturated oil and an excellent source of important lipid-soluble compounds such as tocopherols, carotenoids and phytosterols, which plays a significant role in reducing the risk of skin related disorders and other health benefits. With increasing production of this fruit, one of industrial processes is the production of oil from the fruit. Avocado oil has vitamins, Lecithin, and potassium that assist in calming skin and has vitamin E, antioxidants which offer a relief to eczema or psoriasis related dry, inflamed scaly skin while providing them with protection against harmful UV rays. To summarize it, Avocado oil's constituents are primarily responsible for skin hydration as well as nourishment;

their functions include soothing, defending it from the sun's ultraviolet rays (solar UV radiation), strengthening nails and improving scalp health (improving nail health and scalp health).

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