

South Asian Alternatives to Olive Oil

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Abstract

This review assesses various edible oils, and proposes equivalent alternatives to olive oil. While written from a South Asian perspective, this analysis is relevant for a global audience as well. Olive oil is rich in monounsaturated fatty acids (MUFA), has a high ω 9 oil content, a high ω 6: ω 3 ratio, and a low smoke point. A combination of groundnut or mustard oil, along with corn, soyabean or sunflower oil, offers high MUFA and polyunsaturated fatty acid (PUFA) intake, with a healthy ω 6: ω 3 ratio, and a taste that is acceptable to most populations.

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Introduction

Olive oil is widely considered to be the healthiest amongst all edible oils. Extracted from the fruit of *Olea europaea*, olive oil is produced in the Mediterranean basin. Hence, it is an integral part of the Mediterranean diet.¹ Its high cost and limited availability make it difficult to access for persons living in South Asia. At the same time, its physicochemical properties prevent it from becoming an integral part of South Asian cuisine. In this brief review, we explore various edible oils and assess the most suitable South Asian alternatives to olive oil.

Macro Composition

From a macro-perspective, all edible plant oils are similar. However, their composition is quite different. Olive oil contains only fat, and has no water, carbohydrates, fibre or protein. It contains significant amounts of the fat-soluble vitamins E and K. Olive oil is predominantly composed of monounsaturated fatty acids (MUFA) (oleic acid 70%, palmitoleic acid 0.3-3.5%) and polyunsaturated fatty acids (PUFA) (linoleic acid 15%, alpha-linoleic acid 0.5%). The

remainder is made of palmitic acid (13%) and stearic fatty acid (SFAs).²

Fatty Acid Composition

Olive oil is MUFA-rich (74.5%). The closest oils in terms of MUFA content are high-oleic safflower (75.2%), avocado (70.6%), canola (63.3%), sunflower (63.4%), mustard (56.0%) and groundnut oil (49.3%). Olive oil has 10.5% PUFA. In this regard, oils with a similar content include avocado (13.5%), high-oleic safflower (12.8%), and palm oil (10.0%). The SFA percentage of 14.8% puts olive oil in the same bracket as avocado (11.6%), corn oil (12.7%), flaxseed (9.0%), sesame oil (14.2%) and soybean oil (13.1), and mustard oil (10.7%). Overall, sunflower and mustard oil, followed by groundnut oil, come closest to the composition of olive oil.³

Omega 6: Omega 3 Ratio

MUFA include many oils, and oleic acid, an ω -9 oil is found maximally in high-oleic safflower oil (75.2%), olive oil (71.3%), sunflower (63.4%), and canola (61.8%) oils. Groundnut oil (46.5%), palm oil (41.0%), rice bran oil (41.0%) and sesame oil (41.2%) are edible oils with relatively good oleic acid content.

More important, perhaps, is the ω 6: ω 3 ratio, which is informed by the alpha-linoleic acid: linoleic acid ratio. Similar proportions are offered by avocado (12.5:1), rice bran (15.6:1), and soybean oil (7.3-13.4:1). Brazil nut, grape seed, sesame, sunflower and high -oleic safflower oil, on the other hand, have extremely high ω 6: ω 3 ratios. The lowest ratios, i.e. the healthiest, are seen in canola (2:1); cotton seed (1.5:1), flaxseed (0.2:1), and walnut oil (5:1). Of the indigenous South Asian oils, mustard (2.5:1), and soyabean oil (7:1) have health linoleic acid: alpha-linoleic acid ratios.³

Smoke Point

An important characteristic of an oil is its volatility. The smoke point, or burning point, of an oil decides its suitability for cooking. Temperatures encountered in South Asian kitchens are roughly 1200C in pan/ sauté'/frying, 160-1800C during deep frying, > 2000C in ovens and tandoors.

Olive oil has a lower smoke point (1900C) as compared to most other oils. This renders it unsuitable for most traditional South Asian cooking methods. Oils with a smoke point $\geq$ 2250C include avocado, corn, groundnut, mustard, palm, rice bran, soyabean and sunflower oil.

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Aroma and Taste

Each edible plant oil has a unique aroma and taste. Most individuals and families prefer oils that they have grown up with. This means that indigenous oils, with their familiar aromas and taste, are preferred by the vast majority of people living in South Asia.

Cost

One major determinant of the acceptability of any food stuff, including edible oils, is the cost. Olive oil is expensive, and avocado oil costs more than double the amount. Hence, these are not suitable for most households. Groundnut oil, soyabean oil and mustard oil are affordable for most South Asian families.

No Oil is Perfect

The World Health Organization (WHO) recommends an ideal SFA: MUFA:PUFA ratio of 1:1.5:0.7.⁵ Olive oil's composition gives it a 1:5:0.7 ratio, which is not exactly ideal. Similarly, WHO advocates that ω -6 and ω -3 fatty acids should contribute to 2.5-9% and 0.5-2% of energy intake respectively. This suggests an ideal ω 6: ω 3 fatty acid ratio of 5:1. Olive oil has a 14:1 ratio.⁴ These facts imply that olive oil is not perfect, and needs to be complemented with other edible oils in order to optimize nutritional intake.

The Best of The Rest

Keeping the above points in mind, economical alternatives such as groundnut oil or mustard oil seem appropriate for use in South Asian cuisine. Their high MUFA and PUFA levels, coupled with high smoking point make them healthy choices. High linoleic acid (ω 3 FA) containing oils like corn (57.4%), cotton seed (50.9%), soyabean (50.7%) and sunflower oil (66.2%) can be used to supplement groundnut or mustard oil.

In fact, the ideal prescription for edible oils would be a combination of groundnut or mustard oil, along with corn, soyabean or sunflower oil. Such a combination will ensure high MUFA and PUFA intake, with a healthy ω 6: ω 3 ratio. One must remember that invisible fats are also present in our diet, including cereals, and the total intake of fat should be as per recommended daily allowances.

End Game

Thus, the ideal choice should be a combination of edible plant oils, in moderate amounts. We suggest groundnut/mustard + corn/soyabean/ sunflower oil combination as a healthy, as well as economical, alternative to olive oil.

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