

A Study on the Street Food Available in Swarn Jayanti Nagar, Aligarh

Dr. Sangeeta Kumar

Associate Professor, Department of Chemistry, Sri Tika Ram Kanya Mahavidyalaya, Aligarh-202001, India

Email: sangeeta_iitk[at]yahoo.co.uk

Abstract: *Street food happens to be the most enjoyed food the world over. India is no exception. Concerns about food safety and hygiene have always been issues for all customers or consumers. As a resident of Aligarh, more specifically, Swarn Jayanti Nagar, it was a matter of curiosity and being an occasional consumer, it was important to know if the consumers are being served snacks/ food cooked in the right kind of oil/fats. Swarn Jayanti Nagar is the most happening place in Aligarh right now and it became important to conduct a survey of all vendors to find the quality of oil /fats they use, their awareness of cooking medium they use, what they do with the residual oil, their awareness of healthy and unhealthy fats.*

Keywords: oils, fats, trans fats, saturated fats, unsaturated fats, street food

1. Introduction

According to the Oxford dictionary, street food is the 'prepared or cooked food sold by vendors in a street or other public location for immediate consumption.' It is often sold from a portable food booth, food cart, or food truck, or makeshift temporary structure [1]. About fifty years ago, the variety of food available on such carts or places was limited and restricted to the local cuisine. As the popularity of street food soared, street food menus began to expand their range and vendors became more imaginative to keep up with the increased demand. Today, a dizzying repertoire of street food cuisine can be found across the country; samosas, tikkis, pakoras, vada pav, chow mein, kachoris, chila, chaat, pav bhaji, momos, the list goes on. While in yesteryear, street food mostly catered to the lower middle class with simple and inexpensive fare, today, street food has become increasingly accepted and sought after among the rich and is now commonly served at corporate meetings, elite gatherings, and lavish parties.

In this paper, we analyze the nature of street food, the secret behind its appeal, and study its health impacts.

What makes street food delicious is the presence of fats. Fats contribute to the taste and enhance the look of street food. Fast foods and street food consist largely of ingredients fried in fatty oils, so to analyze the content and health effects of street food, it is imperative to understand fats, their structure, and the different kinds of fats [2].

Fats

Fats are one of the main food groups, others being carbohydrates and proteins [3]. Fats are long chain fatty acids of the saturated or the unsaturated type. Saturated fats are usually solids at room temperature while unsaturated ones are liquid at room temperature and are called oils. Fats or oils are a concentrated or dense source of energy, giving 9 calories per gram. Fats or oils lend taste and flavour to food. One also feels full after consuming fats in any form, leading to a feeling of satiety. Fats are important for the body as they are involved in several metabolic functions. However, a

consumption of excessive fats can lead to obesity and cardiac problems.

Oils are 'refined' to make them suitable for consumption by humans. The refining process removes free fatty acids, mono/diglycerides, gums, and other impurities, and produces oil, which is clear, stable, and has a much longer shelf life as compared to virgin/unrefined oils. However, since the process involves treatment with caustic soda and other chemicals, it adds harmful and unhealthy compounds to the oil [4,5]. Experts recommend using cold pressed oils instead of refined oils.

Why street food is bad for us

The reasons behind the popularity of street food are twofold: it is significantly cheaper than the food served at regular restaurants, and it is delivered much quicker. One does not have to wait for a long time for the food to be delivered. However, the unpleasant truth behind the inexpensive nature of this food is that the vendors use the worst kind of fats, trans fats, as the cooking medium. It is important to understand what trans fats are and how their usage became widespread. In North India, traditionally, desi ghee and mustard oils were the only fats used for cooking. Over time, desi ghee became very expensive and out of reach of the common man

Fats can be classified into saturated and unsaturated fats. Unsaturated fats are further classified into cis and trans fatty acids [6, 7]. Oils, which are liquids, are cis in nature and the human body is equipped to metabolize cis fats only. The human body cannot metabolize trans fats, Figure 1(b). Naturally occurring vegetable oils are unsaturated and they are also of cis configuration, as shown in figure 1(a).

Examples of cis and trans fats

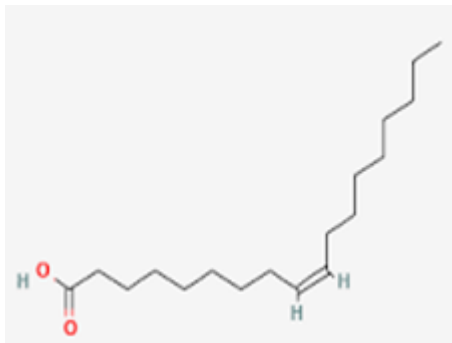


Figure 1(a): Cis form of oleic acid (liquid form) [8]



Figure 1(b): Trans form of Oleic acid, also called Elaidic acid (solid form) [9]

Elaidic acid is a trans fatty acid, and the carbon chains can pack together almost as tightly as those of the saturated stearic acid. Thus, Elaidic acid is a solid at room temperature. Oleic acid is a cis fatty acid, and the bend in the hydrocarbon chain keeps these carbon chains from packing as closely together; fewer interactions lead to a much lower melting point, thus Oleic acid is a liquid at room temperature.

As mentioned above, when desi ghee became very expensive, hydrogenation of oils in presence of a catalyst produced a saturated fat which was called *vanaspati*. Hydrogenation of oils started worldwide after the second World War. In western countries it was called margarine or shortening and widely used in preparation of cakes, cookies and for deep frying. The physical state of this fat was solid. [10,11]

In the process of hydrogenation, if the hydrogenation process was not properly completed, there was a lot of residual unsaturation, but with a changed configuration. The cis oil became trans fat. Incomplete hydrogenation or hydrogenation by incompetent manufacturers gave rise to the worst kind of trans fat. This fat was cheap to produce, and the food cooked in this medium could be sold at cheap prices. There was yet another advantage to food being cooked in *vanaspati*, food cooked in this medium had a longer shelf life. In addition, these fats produce a very

pleasing aroma when heated, and people's olfactory senses are drawn towards these delicious smells. The taste and the aromas, and the low cost and fast cooking times, have resulted in a proliferation of large and small vendors of street food, which are running successfully and to full capacity. Street foods like samosa, jalebi, bread pakora, kachori sabzi, golgappas, noodles, dosa, chila, omelette, pav bhaji, vada pav are all made with the worst kind of trans fat. The oil used is heated several times over. It is never changed, and never discarded at the end of the day. It is used to make the stuffing of samosa or bread pakora the next day.

We need to know if the people cooking this food are aware of the perils of this kind of fat and the foods cooked in this fat.

Purpose of this study

- 1) Are street food vendors aware of the quality of fats they use for cooking?
- 2) Are Street food-vendors aware of the danger of using substandard fat for cooking?
- 3) Are street food vendors aware of the perils of frying for too long and reusing the same fat multiple times?
- 4) Do street food vendors know about cis and trans fats?

Assumption

- 1) Vendors use the worst kind of fat for frying to maximize their profits.
- 2) They are unaware of the quality of oil that they use and what they should use.
- 3) They are unaware of the danger of heating the same oil repeatedly.
- 4) They use the leftover oil to fry repeatedly.
- 5) They have no knowledge of cis or trans fat.

Method

- 1) A questionnaire was designed in Hindi.
- 2) All vendors on the street of Swarn Jayanti Nagar were visited.
- 3) The vendors signed the questionnaire after reading it.
- 4) 4. Questions were asked by the author and the responses of the vendors were recorded.

A translation of the survey/questionnaire is as follows:

Survey

- 1) Name of the Establishment:
- 2) What food and snacks do you make and sell?
- 3) Which fat medium do you use for cooking food/breakfast and snacks?
 Desi ghee Refined Oil Vanaspati
- 4) When the quantity of the oil in the pan becomes less while frying, do you

(a) add more oil/ghee to the same oil/ghee

(b) discard it and add fresh oil/ghee in the pan?

- 5) What do you do with the leftover oil/ghee in the pan?

- 6) Do you know that oil/ghee is not suitable for consumption after frying for a long time?
 Yes No
- 7) Do you know about the two types of fat, cis and trans fat?
 Yes No
- 8) Do you know that cheap vanaspati contains trans fat which is injurious to health?
 Yes No
- 9) Where do you buy oil/ghee/vanaspati and which brand do you buy?

Where do you buy	Brand	Price
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- 10) Will you continue to use the same fat even after the information given in points no. 6 and 8 above?
 Yes No

11) Up to which class have you been educated?

12) How old are you?

(Signature & Name)

2. Observations

- 1) There was a total of 16 establishments/vendors who sold street food in Swarn Jayanti Nagar.
- 2) Three of these were large establishments. They sold sweets as well as street food. Out of these, two sold street food cooked (not sweets) in desi ghee and the other one sold street food cooked in refined oil.
- 3) Five of these sixteen vendors sold street food which did not require frying.
- 4) Out of 16 vendors, fourteen vendors sold street food cooked in refined oil.

Broad details of the survey are summarized below in the table.

S. No	Establishment	Products Sold	Cooking Medium Used	Shop/ Cart
1	A	Tikki, Burger, Dosa, Pav bhaji, Pizza, Chole bhature, Gulab jamun	Desi ghee	Shop
2	B	(i) Sweets, tikki, chila (ii) cakes, pastry, sweets (not sold as street food, served in restaurant)	Desi ghee	Shop
3	C	Sweets, samosa, dosa, kachori sabzi	Sweets in desi ghee, Rest in refined oil	Shop
4	D	Sweets, samosa, bread pakora, kachori sabzi,	Refined oil	Shop
5	E	Sweets, bread pakora, kachori sabzi, samosa	Refined oil	Shop
6	F	Golgappe	Refined oil	Cart
7	G	Golgappe	Refined oil	Cart
8	H	Golgappe	Refined oil	Cart
9	I	Golgappe	Refined oil	Cart
10	J	Golgappe	Refined oil	Cart
11	K	Chila, dosa, pav bhaji, chole chawal, rajma chawal, idli, paratha	Refined oil (<i>No deep frying</i>)	Cart
12	L	Fried momos	Refined oil	Cart
13	M	Chow mein, pav bhaji, momos	Refined oil (<i>No deep frying</i>)	Shop
14	N	Chow mein	Refined oil, butter (<i>No deep frying</i>)	Cart
15	O	Chow mein	Refined oil (<i>No deep frying</i>)	Cart
16	P	Chow mein, egg roll, omelette, boiled egg	Refined oil (<i>No deep frying</i>)	Cart

We present the results of the survey below

Q1. Name of the establishment.

Q2. What food and snacks do you make and sell?

Item wise popularity of each street food shown by the number of vendors selling the item.

S. No	Item	Number of vendors selling the item	S. No	Item	Number of vendors selling the item
1.	Golgappas	6	10.	tikki	2
2.	Sweets (not street food)	5	11.	Chila	2
3.	samosa	3	12.	Fried momos	1
4.	Kachori sabzi	3	13.	Chole chawal	1
5.	Chow mein	4	14.	Rajma chawal	1
6.	Pav bhaji	3	15.	pizza	1
7.	dosa	3	16.	idli	1
8.	Bread pakora	2	17.	Paratha	1
9.	Veg burger	2	18.	omelette	1

The most popular street foods appear to be Golegappas, followed by Chow mein, samosa, kachori sabzi, pav bhaji etc.

Q3. Which fat medium do you use for cooking food/breakfast and snacks?

Of the sixteen vendors, three sold foods cooked in desi ghee while the remaining thirteen sold food cooked in refined oil. Out of the three vendors who were using desi ghee as the cooking medium, two (A and B) made not only sweets but also snacks like tikki, chole bhature, chila and dosa in desi ghee. The other one (C) made only sweets in desi ghee and snacks like samosa, kachori sabzi, and dosa in refined oil.

Of the five vendors selling sweets, three (A, B, and C) made sweets in desi ghee, while two (D and E) made sweets in refined oil.

Q4. When the quantity of the oil in the pan becomes less while frying, do you

- (a) add more oil/ghee to the same oil/ghee or
(b) discard it and add fresh oil/ghee in the pan?

Nine vendors said that they practice (a), that is, they just add more oil to the pan and continue frying. Two vendors said that they discard the oil after a certain number of batches of frying. The question did not apply to five vendors as they were not deep frying.

Q5. What do you do with the leftover oil/ghee in the pan at the end of day?

Three vendors (A, B, and C) who use desi ghee as the cooking medium do not reuse leftover fat. They mentioned that they transfer leftover oil/ghee into a container which is collected by a recycling agency. Of these three, two (A and C) mentioned that the collection is done by an agency appointed by the government. The third (B) mentioned that a private collection agency recycles this used ghee in manufacture of local cosmetics, shoe polish, and locally produced soaps. All these three establishments mentioned regular checking of their food samples by the government. On mentioning that vendors selling food on carts did not mention regular food checks, they said that only places that are registered undergo checks. The vendors who sold food on carts are not registered and therefore, do not undergo any checks. Thus, vendors from D to P do not undergo any checks as they are not registered with the government agencies.

One vendor admitted to using the leftover oil at home. Three vendors add more oil to the leftover oil to fry the next day. Three vendors mentioned throwing away of the leftover oil. One vendor mentioned that this oil is added to crust of samosa /kachoris. The question did not apply to five vendors.

Q6. Do you know that oil/ghee is not suitable for consumption after frying for a long time?

Yes / No

Ten vendors admitted to knowing that they knew that oil/fat becomes unsuitable for consumption after frying for a long time. Six vendors did not know that.

Q7. Do you know about the two types of fat, cis and trans fat?

Yes / No

None of the vendors knew about cis or trans fat. B and C sold packaged chips packets. On pointing out that they mentioned 'No trans fat' on the packet itself. They admitted to reading it but did not pay attention.

Q8. Do you know that cheap vanaspati contains trans fat which is injurious to health?

Yes / No

Nine mentioned that they knew vanaspati is harmful but knew nothing about trans fat. Seven did not know about vanaspati being harmful.

Q9(a). Where do you buy oil/ghee/vanaspati and which brand do you buy?

Most of the oils/fats were purchased from Baradwari, the wholesale market.

Q9(b). Brands of desi ghee used were

- 1) Arvind (7600/-@16 kg tin)
- 2) Nutralite (500/-@litre)
- 3) Grihlaxmi (7300/-@16 kg tin)

Brands of Refined oil used were

- 1) Fortune Soyabean oil (2200/- to 2450/- per 16 kg tin or 170/- per litre)
- 2) Parampara (2200/- to 2600/-per 16 kg tin)
- 3) Emami (170/- per litre)
- 4) Kanhaiya Palm oil (2050/-)

Number of vendors using these oils are as follows:

Six vendors use Fortune soyabean oil, eight of them use Parampara oil which is a blended oil, one used Emami brand soyabean oil while one vendor used Palm oil.

Q10. Will you continue to use the same fat even after the information given in point no. 6 and 8 above?

Yes / No

All mentioned continuing to use the same oil as before.

Q11. Up to which class have you been educated?

Class	None	IXth	Xth	XIIth	UG	PG	BBA
Number of vendors	2	3	5	1	3	1	1

Q12. How old are you?

The ages of the vendors varied from 24 years to 55 years, the median age being 31 years.

3. Conclusions

- 1) The vendors use the worst kind of fat for frying to maximize their profits.
- 2) They are unaware of the quality of oil that they use and what they should use.
- 3) They are unaware of the danger of heating the same oil repeatedly.
- 4) They use the leftover oil to fry repeatedly.
- 5) They have no knowledge of cis or trans fat.

Assumption 1. The vendors use the worst kind of fat for frying to maximize their profits.

Discussion 1. Eight vendors are using Parampara brand oil and one vendor is using Palm oil. Parampara brand is a Palm oil and soyabean blended oil. Palm oil is a highly saturated vegetable fat, semi solid at room temperature. It finds use in the commercial food industry as it is significantly cheaper than soyabean oil and has a high oxidative stability when used for frying. Many processed foods like mayonnaise, peanut butter etc. use palm oil. Profit margin increases when low-cost oils are used. When palm oil and soyabean oil are blended, it does not remain solid, it becomes liquid. Although palm oil is a permitted edible oil, when it comes to cooking oils, palm oil is typically considered the most controversial of the options for both health and environmental reason. Being a saturated fat, it is not considered good for the heart. [12,13]

Assumption 2. The vendors are unaware of the quality of oil that they use and should use.

Discussion 2: Answers to questions 4, 5, and 6 reveal that the vendors are very much aware that good quality oil should be used, but cost cutting and greed for increased profit margins makes them use the cheaper brand of oil. They were aware that low-cost hydrogenated fat was unhealthy and therefore did not use it.

Assumption 3. They are unaware of the danger of heating oil repeatedly.

Discussion 3: About 60% of the vendors knew that reusing oil heated repeatedly is harmful for health. Again, in order to maximize profits, they re-use the heated oil in several ways. Only three vendors mentioned that they do not reuse the heated oil beyond a certain number of batches of frying.

Assumption 4. They use the leftover oil to fry repeatedly.

Discussion 4: This is true to a large extent. Out of the sixteen vendors, the question did not apply to five vendors as they did not deep fry at all. Three vendors responded that they reuse the oil, and do not discard it. Three vendors mentioned throwing away the leftover oil. Two vendors mentioned that they either use the left-over oil at home or in the crust/pastry of samosas or kachoris, and three used it in one form or the other. Three vendors (A, B, and C) using desi ghee as the cooking medium mentioned collection of residual oil by agencies, two of them government appointed and one private.

Assumption 5. They have no knowledge of cis or trans fat.

Discussion 5: None of the vendors knew anything about cis or trans fat. Even vendors B and C who sold readymade packets of branded chips (these brands carry the label 'no trans fat'), had no idea about trans fat. When pointed out, they did admit to reading the label but never paid attention to its meaning.

Final Conclusion

- 1) On account of being largely fried, street food is not healthy if consumed very frequently. Good quality oil/fat is not usually used in the cooking process. The fat is heated at very high temperatures and the food is cooked repeatedly in batches, using the same oil. Cis oil undergoes transformation to trans form on heating at high temperatures which is harmful to the body. Very few vendors replace the oil which has undergone heating in several batches of frying. Street food is usually fat dense and low on nutrition.
- 2) Morning times might be the best times to buy and eat street food like kachori sabzi and jalebis as the oil might more likely than not be fresh, and not mixed with the leftover oil from the previous day.
- 3) The inhabitants of Swarnjayanti Nagar are mostly working-class people and the street food market caters to a large swath of the residents. People living here are more aware about their health and demand quality in their food. In view of this fact, the street food vendors use refined oil, not vanaspati.
- 4) However, there are a few areas of concern. In two of the establishments visited, a worker gave away the owner in a stage whisper by saying that they do not "waste" oil, they add it to the filling of samosas that are made next day.
- 5) Vendor B mentioned using only one litre packets for refined as well as for desi ghee. Although it comes out to be relatively more expensive, but after using 1.5 litres of oil/ghee, they discard the oil/fat (it is collected) completely. It is easy to contaminate the oil/fat in the 16 kg canister. Workers can pilfer/contaminate the tin but cannot do that to a packet.
- 6) In view of the above observations, it can be concluded that although delicious, street food should be restricted to an occasional treat. The fat used might not be of the best quality and overheating/reusing of oil may produce free radicals which is harmful to the heart and can cause coronary diseases.
- 7) Since unregistered food carts do not undergo any checks by the government, customers can never be sure about the quality of food being served. It might be a good idea to stay away from carts.
- 8) Interventions by the government in the form of nutrition campaigns are required which focus not only on the hygiene aspect but also on the fat content, quality of fat used by the vendors and their registration by government. There can be incentives for collection of used oil. Limit on the number of batches used for frying, and food literacy.
- 9) This is a small survey, to understand the mindset, educational level, and knowledge of the vendors. It needs to be on a bigger scale with testing on oil/fat samples, with a bigger group of people. The local government should also step in as people are largely ignorant about their health needs.

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