

ANALYSIS OF TRANS FAT IN EDIBLE GHEE



Food Technology & Nutrition Section,
FMRRRC, PCSIR Labs. Complex, Karachi

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**ASSESSMENT OF TRANS FAT IN
EDIBLE GHEE**

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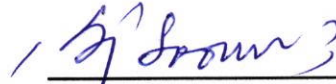
M/s. Centre for Governance and Public Accountability (CGPA)

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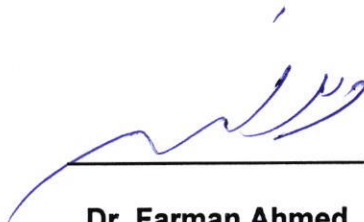
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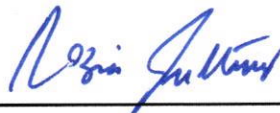


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Objectives of Study:

The Centre for Governance and Public Accountability (CGPA) is a non-profit organization committed to promoting transparency, public accountability, and improved governance in Pakistan. CGPA, in collaboration with Nutrition International, is implementing an intervention to assess the quality and compliance of edible ghee products available in the local market. Under this project, CGPA submitted approximately 60 ghee samples across the provinces and Azad Jammu and Kashmir, comprising both partially hydrogenated and fully hydrogenated varieties. The specific objective of the study was to investigate the current status of industrially-produced *trans* fats in the edible ghee available in Pakistani marketplaces.


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TRANS FAT ASSESSMENT IN EDIBLE GHEE SAMPLES

This joint study includes the analysis of TFA in edible ghee samples collected from all over the four provincial capitals, federal capital and from AJK. The purpose was to determine the current status of regulatory compliance for TFA regulations in the country. It is worth mentioning that since year 2021 this is the ninth (9) project related to TFA lab assessment which has been completed at Food Technology and Nutrition Section, PCSIR Labs. Complex, Karachi.


1. Samples Collection:

CGPA submitted approximately 60 ghee samples across the provinces and Azad Jammu and Kashmir, comprising both partially hydrogenated and fully hydrogenated varieties. The samples were collected from across Pakistan through respective Provincial Food Authorities from and 2nd Dec to 10th Dec 2025 and were dispatched to PCSIR for testing.

At the time of sample collection their details were recorded, however the limited information was shared with the lab. Majority of samples were coded. These samples were stored till analysis as per the storage requirement of the samples. The sample were analysed independently, no pooling of samples was performed.

2. Analysis of Trans Fat

The analysis of samples was performed at Food Technology and Nutrition Section, PCSIR Labs. Complex, Karachi. The method used is Gas Chromatography method. This lab has participated till date in LGC proficiency testing schemes for five (5) consecutive years to ensure quality assurance of its analysis results. Further it participated in a global ring trail for fatty acid analysis to improve its capability. The lab achieved ISO-17025 accreditation status for trans-fat in 2023 and is successfully maintaining this. Lab is also implementing various result validity tools for trans fat analysis i.e. use of CRM, PT participation, Control Samples, Blind Samples etc.


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3. Results of study

The results of this study are given in tables below with the identity of samples as provided by the food authorities.

3.1. KPK Food Safety and Halal Food Authority (KPK FS&HFA)

No. of Samples: 10

Sr. No.	Product Name	Sample Code	Results (Trans Fat %)
1.	Ghee	KP001	6.62
2.	Ghee	KP002	7.11
3.	Ghee	KP003	6.86
4.	Ghee	KP004	6.11
5.	Ghee	KP005	6.63
6.	Ghee	KP006	8.63
7.	Ghee	KP007	6.92
8.	Ghee	KP008	5.60
9.	Ghee	KP009	3.79
10.	Ghee	KP0010	11.95

3.2. Islamabad Food Authority (IFA)

No. of Samples: 5

Sr. No.	Product Name	Sample Code	Results (Trans Fat %)
1.	Maan Pasand Banaspati Ghee	IFA-HMSA-16-25	0.05
2.	KhusbuPasand Banaspati Ghee	IFA-HMSA-17-25	0.05
3.	Afazal Banaspati Ghee	IFA-HMSA-18-25	0.37
4.	Monia Banaspati Ghee	IFA-HMSA-19-25	8.26
5.	Islamabad Banaspati Ghee	IFA-HMSA-20-25	0.17


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3.3. Punjab Food Authority (PFA)

No. of Samples: 17

Sr. No.	Product Name	Sample Code	Results (Trans Fat %)
1.	Kausar Banaspati	LHR-YI-01-26	0.09
2.	Kashmir Banaspati	LHR-YI-02-26	3.43
3.	Manpasand Banaspati	LHR-YI-03-26	0.10
4.	Mezan Banaspati	LHR-YI-04-26	1.92
5.	Dalda VTF Banaspati	LHR-YI-05-26	0.48
6.	Shafaq Banaspati	LHR-YI-07-26	3.98
7.	Shan Banaspati	LHR-YI-08-26	0.08
8.	Darra Khber Banaspati	LHR-YI-09-26	0.63
9.	Tullo Banaspati	LHR-YI-10-26	0.56
10.	Soya Supreme Banaspati	LHR-YI-11-26	1.49
11.	Eva VTF Banaspati	LHR-YI-12-26	0.43
12.	Nuturella Banaspati	LHR-YI-13-26	10.22
13.	Shams Banaspati	LHR-YI-14-26	7.77
14.	Golden Sun Banaspati	LHR-YI-15-26	0.09
15.	Punjab Banaspati Ghee (loose)	LHR-MR-11-26	8.14
16.	Kisan Banaspati	LHR-MR-12-26	7.86
17.	Kamyab Banaspati	LHR-MR-13-26	13.34

3.4. Baluchistan Food Authority (BFA)

No. of Samples: 05

Sr. No.	Product Name	Sample Code	Results (Trans Fat %)
1	Banaspati	38G	0.14
2	Banaspati	39G	0.08
3	Banaspati	40G	0.09
4	Refined Oil	41G	0.81
5	Banaspati	42G	0.55


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3.5. Sindh Food Authority (SFA)

No. of Samples: 18

Sr. No.	Product Name	Sample Code	Results (Trans Fat %)
1.	FAT&OIL	SFA/KOR/25/01A	2.46
2.	FAT&OIL	SFA/KOR/25/02A	0.24
3.	FAT&OIL	SFA/KOR/25/03A	0.34
4.	FAT&OIL	SFA/KOR/25/04A	0.05
5.	FAT&OIL	SFA/KOR/25/05A	17.15
6.	FAT&OIL	SFA/KOR/25/06A	0.80
7.	FAT&OIL	SFA/KOR/25/07A	7.57
8.	FAT&OIL	SFA/KOR/20/08A	9.16
9.	FAT&OIL	SFA/KOR/25/09A	6.09
10.	FAT&OIL	SFA/KOR/25/10A	0.53
11.	FAT&OIL	SFA/25/01B	0.12
12.	FAT&OIL	SFA/25/02B	10.90
13.	FAT&OIL	SFA/25/03B	0.20
14.	FAT&OIL	SFA/25/04B	0.11
15.	FAT&OIL	S1	0.31
16.	FAT&OIL	S2	0.25
17.	FAT&OIL	S3	1.62
18.	FAT&OIL	S4	1.18

3.6 Azad Jammu & Kashmir Food Authority (AJKFA)

No. of Samples: 05

Sr. No.	Product Name	Sample Code	Results (Trans Fat %)
1	Al-Atif Banaspati	AJK1	0.28
2	Dewan Banaspati	AJK2	0.40
3	ACP Banaspati	AJK3	0.14
4	Gulberg Banaspati	AJK4	1.96
5	Chaman Banaspati	AJK5	0.09

Key Findings

A nationwide assessment of 60 edible ghee samples was conducted to evaluate compliance with Pakistan's regulatory limit of $\leq 2\%$ industrially produced trans fatty acids (TFA). Samples were collected across all provinces, Islamabad, and Azad Jammu & Kashmir (AJK), representing both branded and loose Banaspati ghee products.

1. Widespread Non-Compliance

- A substantial proportion of samples exceeded the 2% regulatory limit.
- Several products contained extremely high TFA levels (up to 17.15%), far above both current and previous limits.

2. Banaspati Ghee – Primary Risk Category

- Banaspati ghee emerged as the major source of trans fat exposure.
- Many samples, particularly loose/unbranded products, showed TFA levels between 6%–13%, which indicates continued use of partially hydrogenated oils (PHOs).

3. Regional Disparities

- **Khyber Pakhtunkhwa (KPK):** 100% of samples non-compliant (3.79%–11.95%)
- **Punjab & Sindh:** Mixed results; both compliant and highly non-compliant products present
- **Islamabad:** Mostly compliant, with isolated violations
- **AJK & Balochistan:** Fully compliant ($\leq 2\%$) across all samples

Implications

- The results confirm that industrial trans fats have not been effectively eliminated from the Pakistani food supply.
- Continued presence of high TFA levels poses a serious public health risk, particularly increasing the burden of cardiovascular diseases.
- The variation across regions indicates uneven regulatory enforcement and monitoring gaps.

Key Conclusions

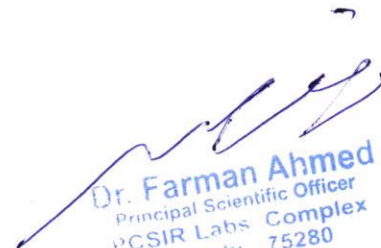
- Systemic non-compliance persists, especially in the banaspati ghee sector.
- Loose and unregulated products represent the highest risk category.
- At the same time, full compliance in AJK and refined oil sector demonstrates technical feasibility, proving that low-TFA production is achievable.

Recommendations (Priority Actions)

- Strengthen enforcement of $\leq 2\%$ TFA regulations nationwide
- Phase-out partially hydrogenated oils (PHOs) completely
- Target high-risk segments
- Enhance routine surveillance and laboratory testing capacity
- Engage industry for reformulation and compliance support

Overall Message

Pakistan has made substantial progress, but the persistence of high trans fat levels—particularly in banaspati ghee—indicates that urgent, coordinated regulatory and industry action is required to achieve full compliance and protect public health.


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ANNEXURE

Total Number of Samples: 60

Azad Jammu & Kashmir (5)

Sr. No.	Company Name	Product Name	Sample Code	Batch No.
1	Al-Atif Banaspati	Comfort Oil Mills	AJK1	-
2	Dewan Banaspati	KKR Oil & Ghee Mills	AJK2	-
3	ACP Banaspati	KKR Oil & Ghee Mills	AJK3	-
4	Gulberg Banaspati	KKR Oil & Ghee Mills	AJK4	-
5	Chaman Banaspati	Neelum Oil & Ghee Mills	AJK5	-

KPK Food Authority (10)

Sr. No.	Company Name	Product Name	Sample Code	Batch No.
1.	-	Ghee	KP001	379
2.	-	Ghee	KP002	25-Dec
3.	-	Ghee	KP003	371
4.	-	Ghee	KP004	23-12-2025
5.	-	Ghee	KP005	Dec-25
6.	-	Ghee	KP006	Dec-25
7.	-	Ghee	KP007	Dec-25
8.	-	Ghee	KP008	Dec-25
9.	-	Ghee	KP009	Dec-25
10.	-	Ghee	KP0010	Dec-25

BFA (5)

Sr. No.	Company Name	Product Name	Sample Code	Batch No.
1.	-	Tohfa Banaspati	38G	-
2.	-	Hamdaan Banaspati	39G	-
3.	-	Khyber Banaspati	40G	-
4.	-	Roshan Vegetable Refined Palm Oil	41G	-
5.	-	Taiba Banaspati	42G	-

SFA (18)

Sr. No.	Company Name	Product Name	Sample Code	Batch No.
1.	-	FAT&OIL	SFA/KOR/25/02A	-
2.	-	FAT&OIL	SFA/KOR/25/06A	-
3.	-	FAT&OIL	SFA/KOR/25/01A	-
4.	-	FAT&OIL	SFA/KOR/25/04A	-
5.	-	FAT&OIL	SFA/KOR/25/03A	-

6.	-	FAT&OIL	SFA/KOR/25/05A	-
7.	-	FAT&OIL	SFA/KOR/25/07A	-
8.	-	FAT&OIL	SFA/KOR/25/09A	-
9.	-	FAT&OIL	SFA/KOR/25/10A	-
10.	-	FAT&OIL	SFA/KOR/20/08A	-
11.	-	FAT&OIL	SFA/25/01B	-
12.	-	FAT&OIL	SFA/25/02B	-
13.	-	FAT&OIL	SFA/25/03B	-
14.	-	FAT&OIL	SFA/25/04B	-
15.	-	FAT&OIL	S1	-
16.	-	FAT&OIL	S2	-
17.	-	FAT&OIL	S3	-
18.	-	FAT&OIL	S4	-

IFA (5)

Samples were collected by Hafiz Muhammad Shahbaz Ahmed on 21, 22 December 2025

Sr. No.	Sampling Location	Product Name	Sample ID	Batch No.
1.	G-11 Markaz, Islamabad	Maan Pasand Banaspati Ghee	IFA-HMSA-16-25	-
2.	Tarnol, Islamabad	KhusbuPasand Banaspati Ghee	IFA-HMSA-17-25	-
3.	Tarnol, Islamabad	Afazal Banaspati Ghee	IFA-HMSA-18-25	-
4.	Asad Khan Market, Tarnol, Islamabad	Monia Banaspati Ghee	IFA-HMSA-19-25	-
5.	Asad Khan Market, Tarnol, Islamabad	Islamabad Banaspati Ghee	IFA-HMSA-20-25	-

Punjab Food Authority (PFA) (17)

Sr. No.	Company Name	Product Name	Sample Code	Batch No.
1.	KAUSAR Ghee	KAUSAR BANASPATI	LHR-YI-01-26	664
2.	United industries	KASHMIR BANASPATI	LHR-YI-02-26	17829
3.	MANPASAND	MANPASAND BANASPATI	LHR-YI-03-26	2510252
4.	PTML	MEZAN BANASPATI	LHR-YI-04-26	2510081
5.	DALDA	DALDA VTF BANASPATI	LHR-YI-05-26	2711271
6.	A&I agro industries	SHAFaq BANASPATI	LHR-YI-07-26	11020
7.	Mehboob Industry	Shan Banaspati	LHR-YI-08-26	225-26
8.	AR Industries	Darra Khber Banaspati	LHR-YI-09-26	-
9.	Wazir Ali Industry	Tullo Banaspati	LHR-YI-10-26	2510072-H1A
10.	Agro Processors	Soya Supreme Banaspati	LHR-YI-11-26	G16-3M6
11.	Shuja Abad	Eva VTF Banaspati	LHR-YI-12-26	180
12.	Punjab Oil Mill	Nuturella Banaspati	LHR-YI-13-26	942

13.	Chitral Oil and Ghee	Shams Banaspati	LHR-YI-14-26	14
14.	IFFCO Pakistan	Golden Sun Banapati	LHR-YI-15-26	220325-08-C
15.	-	Punjab Banaspati Ghee (loose)	LHR-MR-11-26	-
16.	-	Kisan Banaspati	LHR-MR-12-26	-
17.	-	Kamyab Banaspati	LHR-MR-13-26	-

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