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Chilli Powder

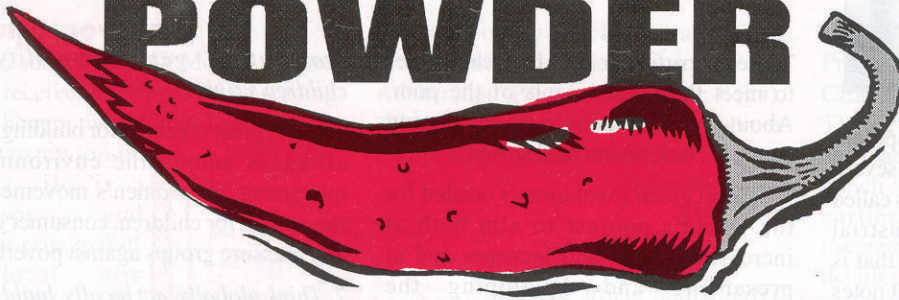
7 Brands Put To 21 Tests

Can You Stop
Growing Old?

CONSUMER EDUCATION AND RESEARCH SOCIETY, AHMEDABAD, INDIA



CHILLI POWDER



Not So Fine

Just imagine that to find out the best brand of chilli powder we tested 30 samples each of 7 widely sold brands against 21 parameters and 7 national and international standards.

Chilli powder occupies the pride of place on your kitchen shelves, next only to sugar, salt and turmeric powder. Modern research has brought to light a handful of health benefits granted to chillies. Consumer concern, however, centres on the quality of packed chilli powder available in the country. Do the brands live up to the expectation of 'purity' proclaimed by the ads? Do the brands meet the requirements of colour, taste, etc. to suit the Indian palate? What do our standards specify?



ORKAY

What We Tested

We tested 7 widely - sold brands of chilli powder — *MTR*, *Orkay*, *Ramdev*, *Madhur*, *Everest*, *Shree Ganesh* and *Anupam* — representing different regions of the country. Except *Orkay* and *Everest*, all other brands carried the Agmark certification. We also tested two varieties of loose chilli powder available in the local market. Altogether 30 samples of each brand were tested.



MTR



MADHUR

How We Tested

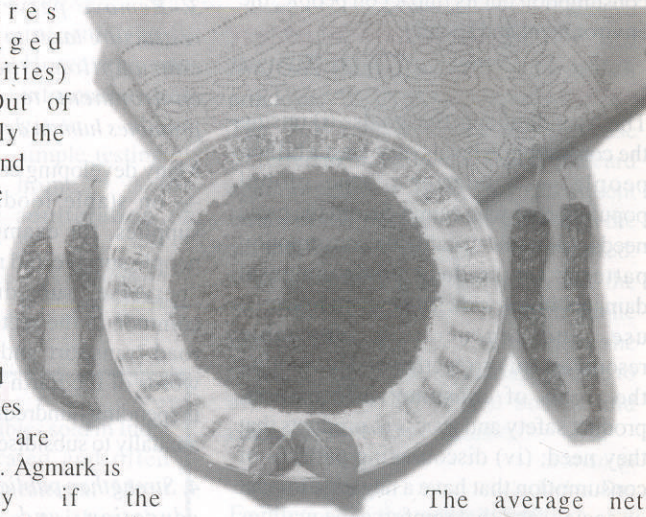
All the brands were tested against seven standards, namely : Agmark, Bureau of Indian Standards (BIS), Prevention of Food Adulteration (PFA) Act, British Standards (BS), ISO, US Standards and Weights and

Measures (Packaged Commodities) Rules. Out of these, only the PFA Act and the standard for Weights and Measures Packaged Commodities Rules are mandatory. Agmark is mandatory if the manufacturer opts for an Agmark certification on the product.

The brands were tested against 21 parameters for comparative analysis. We even rated and ranked the brands based on their performance vis-a-vis chemical parameters, heavy metals, physical testing and sensory analysis.

Less Weight

The standards of the Weights and Measures Packaged Commodities Rules 1977 allow an error of ± 3 gm in 100-gm packets and ± 1.5 gm in 50-gm packets. That is, under the law, each 100-gm packet should contain at least 97 gm., and a 50-gm pack should have a minimum of 48.5 gm.



The average net weight of *Everest* (97.5 gm) and *Madhur* (99.7 gm), though within the permissible error limits, was found to be less. All 32 packets of *Everest* weighed less than the claimed weight of 100 gm. Nine packets were below the maximum permissible error limit. Readers may remember our turmeric powder test report (July-August 1998) which revealed that 14 out of 28 packets of *Everest* were below the limit of the maximum permissible error.

Nineteen out of 32 packets of *Madhur* weighed less though within the permissible error limit. Six packets of *Ramdev* weighed less though, again, within the permissible limits. Fourteen packets

Key Findings

1) We tested seven brands of packed chilli powder — **Madhur, Anupam, Everest, MTR, Orkay, Ramdev, and Shree Ganesh**. Except for **Orkay** and **Everest**, all were Agmarked.

2) The average net weight of **Everest** (97.5 gms) and **Madhur** (99.7 gms) was less than the claimed weight, though they were within the limits of the maximum permissible error.

3) **MTR** (Rs 10.50), which ranked fourth, was the most expensive brand. **Ramdev**, which performed the best, was priced at Rs 7.50. **Shree Ganesh** (Rs 7.00) was the cheapest among the brands tested.

4) **MTR** (14.9%) and **Orkay** (14.7%) could not meet the international standard for non-volatile ether extract which requires it to be not less than 15%. This test is done to check the quality of capsicum used.

5) Only **MTR** and **Orkay** did not have any oil in their product. As per the BIS, the product should be free from added oil.

However, the Agmark (recent amendment) and the PFA Act allow the presence of 2 per cent oil with label declaration. Only **Madhur** and **Everest** carried this declaration. In the rest, though the presence of oil was detected, there was no label declaration which is required by the law.

6) The Scoville index indicates the pungency of chilli powder. While the BIS requires it to be not less than 24,000, the US standard provides a range of 25,000-40,000. **Everest** (24,000) and **Anupam** (24,000) were on the border line. While all the brands met BIS specifications, none of the brands complied with the US standards.

of **Anupam** had lower net weight but only one packet was lower than the permissible error.

If the company gives 1 or 2 gm less, individually it may not make much difference to you. Imagine what happens when you go for the same brand again and again! Also, the unjust enrichment reaped by a manufacturer who produces in bulk, will run into a large sum — all at the cost of consumers as a class. (see Table on 'unjust enrichment' pg 9)

Some manufacturers, however, give you more. Twenty out of 32 packets of **Orkay** recorded a higher net weight than the claimed 100 gm.; it ranged between 103.3 and 106.4 gms. Seven packets of **Shree**

Ganesh too gave a higher net weight (103.1 - 104.9 gms).

Not So Fine

Chilli powder should mix well with food. Therefore fineness is an important quality. All the brands failed to meet both the BIS and US specifications. The BIS requires that the entire chilli powder should pass through a 500-micron sieve. None of the brands met this specification. The readings ranged between 70 per cent and 99.6 per cent.

No brand, however, carried the IS certification. Surprisingly, the PFA Act and Agmark have no specification for this parameter. Agmark had covered this parameter in the context of turmeric powder.



The brands were also tested against the US Standards. The US standards require that 95 per cent chilli powder should pass through a 425-micron sieve. None of the brands could meet this US Standards. One of the loose brands performed the worst with a reading of 16 per cent. It was followed by **Shree Ganesh** with a reading of 20 per cent. (See the 'Results' table)

Is Your Chilli Pungent Enough ?

The Scoville Index represents the pungency of chilli powder. Chilli powder should be pungent enough to provide a spicy taste. As per the BIS the Scoville Index should not be less than 24,000. **Anupam** and **Everest** were on the border line with the Scoville Index of 24,000. **Orkay** (60,000) and **Ramdev** (60,000) were found to be the most pungent. All the brands passed the BIS test. But none of them could meet the US Standard. The US Standard gives a range between 25000 and 40000. The BIS stipulates no upper limit.

How Oily?

As per the BIS, chilli powder should be free from added oils. The Agmark and the PFA Act allow the presence of edible oil up to '2 per cent in chilli powder' with label declaration. All brands had oil except **MTR** and **Orkay**. Only **Madhur** and **Everest** had label declaration about the presence of oil in their products. **Ramdev, Shree Ganesh** and **Anupam** did not have any label declaration though it is required by the law.



RAMDEV



ANUPAM



EVEREST



SHREE GANESH

Chilli Powder: Rating and Ranking

Brands	Price (Rs/100 gm)	Rank	Overall weighted score (In%)					Chemical Analysis weighted score	HeavyMetals weighted score	Physical weighted score	Sensory weighted score	
			0	15	30	45	60					75
RAMDEV	07.50	1	[Progress bar showing 75%]					75	19.2	19.6	10.1	26.1
ORKAY	10.00	2	[Progress bar showing 69%]					69	13.8	19.9	14.0	21.2
MADHUR	08.00	3	[Progress bar showing 67%]					67	17.6	19.5	09.0	21.2
MTR	10.50	4	[Progress bar showing 64%]					64	14.7	18.4	14.9	16.2
ANUPAM	07.50	5	[Progress bar showing 62%]					62	18.0	19.8	12.0	12.3
SHREE GANESH	07.00	6	[Progress bar showing 61%]					61	16.1	19.5	03.0	22.4
EVEREST	08.00	7	[Progress bar showing 49%]					49	17.9	19.3	00.0	11.4
Weightages in percentage							100	25	25	15	35	

Note: The loose samples were not ranked as the PFA Act does not allow the sale of loose chilli powder

We wrote to the Bureau of Indian Standards to send us procedure to differentiate and determine the presence of added oil from natural oil in chilli powder. But BIS informed that, "We have not been able to locate methodology for differentiating the presence of added oil from natural oil"

How Good is Your Chilli Powder ?

All the brands were tested for heavy metals. Only the PFA Act specifies standards for heavy metals. All the brands tested met these specifications (see 'Results'). All the brands were free from arsenic, tin, cadmium and mercury.

The brands were also tested for moisture, total ash, ash insoluble in HCl, crude fibre and non-volatile ether extract. All the brands met the standards set by the Agmark, the BIS and the PFA Act.

Non-volatile ether extract is a test to check the quality of capsicum used. The higher is the value, the better is the quality. A lower value suggests a poor quality of the raw material used.

Though the BIS specifies a limit of not less than 12.00, international standards (British and ISO) have set higher limits of not less than 15.00. **MTR** (14.9) and **Orkay**(14.7) failed to meet the international standards.

All the brands were found free from pesticide residues, and fungal and mould growth. Surprisingly, there are no international standards for pesticide residues and fungal and mould growth in chilli powder.

Sensory Analysis

In addition to Scoville Index, we also conducted visual sensory testing of colour of all the brands. Altogether 12 panellists were asked to give their preference about the colour of the coded chilli powder. The colour of **Ramdev** was preferred by most of the panellists, followed by **Shree Ganesh**.

Branded vs Loose

We bought two loose samples of chilli powder from the market for testing and comparing them with the brands. Surprisingly, one of the branded products could not perform as well as the loose ones.

However, as per the PFA Act, no one is supposed to sell powdered spices unless they are packed. In view of these specifications we did not consider loose chilli powder for rating and ranking.

Rating & Ranking

All the 7 brands and two loose packets were tested for various parameters. Weightages were laid down for each parameter, after extensive consultation with experts. The weightages assigned were: chemical (25%), heavy metals (25%), sensory (35%) and physical (15%).

Ramdev performed the best with a score of 75, followed by **Orkay** (69). **Everest** (49) was at the bottom. The two loose chilli powder samples were not taken up for ranking.

Manufacturers' Views

As is our practice, we invited manufacturers' comments on our findings on their respective brands before publication. Data on brands other than their own were not conveyed to them.

Manufacturers of **Everest** said that various standards of purity and quality laid down by the existing statute are good enough to take care of the public health and consumers' interest. They added, "An

additional exercise of efforts subjecting them to new and extraneous tests seems to be totally unwarranted in as much as such spree does not have an approved and acceptable sanction behind it."

Our sensory tests adhere to detailed, international scientific procedures, practised by international consumer organisations.

Ramdev Food Products Ltd. (**Ramdev**); Harihar Foods Pvt. Ltd. (**Shree Ganesh**) and K.M. Industries (**Anupam**) forwarded our letters to All India Association of Food Industries. The Association replied on their behalf. The Association did not agree to our results and said that, "Your reports are not authentic and therefore test reports of your laboratory are not acceptable to us". They even said that such reports may confuse the consumers. They also raised doubts about the parameter 'scoville index' saying it has inherent 'defects of variability and rapid fatigue of human judgement'.

The comparative testing was carried out on the different parameters included

under the Prevention of Food Adulteration Act 1954, the IS:2445(84), the packaged commodities rules of the Standards of Weights and Measures (77) and the Agmark standard. Hence the tests carried out are authentic and cannot create confusion to the consumers.

The 'Scoville Index' parameter is prescribed in the IS which is identical with ISO: 3513(95), issued by the International Organisation for Standardization (ISO). The BIS had adopted the said standard on the recommendation of the Food Analysis and Nutrition Sectional Committee and approved by the Food and Agriculture Division Council.

The manufacturers of **MTR**, **Madhur** and **Orkay** did not reply.

Plan of Action

CERS recommends:

- ☞ harmonisation of the standards like the IS, the PFA Act and the Agmark grade which apply within the country;
- ☞ the PFA Act to include a best before/ expiry date

Unjust Enrichment to Manufacturers

Brand	Under-weight packs (out of 32)	Individual Pack Weights (gm)							Manufacturers' Gain* (paise/100 gm)
Ramdev	6	49.8	49.4	49.7	49.7	49.9	48.8		2 to 18
Orkay	1	99.2							8
Madhur	19	98.4	98.5	98.7	97.6	99.1	99.1	99.5	2 to 22
		97.2	99.7	99.1	99.6	97.9	99.3	99.8	
		99.1	99.6	97.2	99.6	98.7			
Anupam	14	98.7	98.7	97.0	98.0	98.0	97.6	96.4	1 to 27
		99.4	99.2	97.4	97.4	99.9	99.8	98.3	
Shree Ganesh	4	97.6	99.6	99.8	99.8				1 to 17
Everest	32	96.3	98.5	98.5	96.6	97.1	96.4	97.2	3 to 31
		97.5	97.5	99.2	97.6	96.8	97.8	97.6	
		97.2	98.1	97.2	96.7	96.6	96.3	98.7	
		98.5	96.9	99.6	97.7	97.5	96.1	97.0	
		97.0	97.7	98.5	97.0				

☐ Packets with weights less than the permissible error.

* A few paise on an individual pack may look insignificant. However, taking into account the large number of chilli packets being sold throughout the country, the manufacturers' gain may run into millions of rupees.

Test Yourself

Shake the sample of chilli powder with water in a beaker and keep it for sometime. If adulteration with saw-dust is there it will float on the surface of water and if artificial colour is used it will show up in the water. Water soluble artificial dye can be detected by sprinkling a small quantity of chilli powder on the surface of water in a glass. The soluble dye will immediately start descending in colour streaks.

Appendix I

Addresses of Manufacturers

- 1) **Ramdev**
Ramdev Food Products Ltd.
Ramdev House 1095,
Madhupura
Ahmedabad 380 004
- 2) **Orkay**
Bhavani Foods Pvt. Ltd.
Plot No.11
Food Industrial Complex, Metagalli
Mysore 570 016
- 3) **Madhur**
Madhur Food Products Ltd.
Madhur Complex
Stadium Cross Road
Ahmedabad - 380 009, Gujarat
- 4) **MTR**
MTR Foods Ltd.
No.85, Bommasandra Industrial
Area Hebbagodi Anekal Taluk
Bangalore 562 158
- 5) **Anupam**
K.M. Industries
46, G.I.D.C.
Nadiad - 387 001
Gujarat
- 6) **Shree Ganesh**
Harihar Foods Pvt Ltd, Khokhara
Ahmedabad 380 008
- 7) **Everest**
S. Narendrakumar & Co.
Nand Ashish, R.B. Mehta Road
Ghatkopar (E)
Mumbai 400 077

Appendix II

Chilli Powder : Results

Key: NMT - Not More Than, NLT - Not Less Than, ○ - Brands not conforming to BIS, Ag - Agmark, 🐾 - nil, NM - Not Mentioned ppm - parts per million

STANDARDS	WEIGHT (In grams)	PRICE Rs/100gms	CHEMICAL ANALYSIS			SENSORY Scoville Index	PHYSICAL Fineness % passes through	HEAVY METALS			Edible Oil		
			Moisture %	Ash Total Ash % in HCl%	Ash insol. in HCl%			Crude Fibre%	Non Volatile Ether extract %	Lead ppm		Copper ppm	Zinc ppm
AGMARK			NMT 10.00	NMT 8.00	NMT 1.25	NMT 30.00	NLT 12.0	NLT	NMT	NMT	NMT	NMT 2%	
BIS			NMT 10.00	NMT 8.00	NMT 1.30	NMT 30.00	NLT 12.0	NLT	NMT	NMT	NMT	Free from added oils	
PFA Act			NMT 12.00	NMT 8.00	NMT 1.30	NMT 30.00	NLT 12.0	NLT	NMT	NMT	NMT	NMT 2% (Label declaration required)	
BS			NMT 11.00	NMT 10.00	NMT 1.60	NM	NLT 15.0	NLT	NMT	NMT	NMT	NM	
ISO			NMT 11.00	NMT 10.00	NMT 1.60	NMT 28.00	NLT 15.0	NLT	NMT	NMT	NMT	NM	
US			NMT 11.00	NMT 8.00	NMT 1.50	NM	NM	95% through 425 micron	NMT	NMT	NMT	NM	
BRANDS								BIS	US				
RAMDEV(Ag)	50.6*	7.50	3.9	5.4	0.04	14.5	23.0	60,000	48	0.9	7.2	19.2	Present
ORKAY	103.5	10.00	7.0	6.1	0.20	9.8	14.7	60,000	42	0.9	6.2	18.5	🐾
MADHUR(Ag)	99.7	8.00	3.8	5.6	0.26	11.1	22.0	48,000	56	🐾	7.0	25.2	Present
MTR(Ag)	101.2	10.50	4.6	6.6	0.20	12.2	14.9	48,000	88	1.6	7.1	21.4	🐾
ANUPAM(Ag)	100	7.50	5.0	5.6	0.36	12.6	27.2	24,000	26	0.5	8.9	15.7	Present
SHREE GANESH(Ag)	101.7	7.00	2.9	6.2	0.54	11.9	22.9	48,000	20	🐾	7.4	24.1	Present
EVEREST	97.5	8.00	4.2	5.0	0.08	18.4	22.4	24,000	34	0.6	7.0	22.3	Present
LOOSE(-1)	100	8.00	4.7	5.9	0.35	12.1	27.1	48,000	16	🐾	8.9	27.0	Present
LOOSE(-2)	100	5.00	5.4	6.6	0.40	14.8	22.7	36,000	22	🐾	9.6	22.5	Present

Note: None of the brands contained arsenic, tin, cadmium, mercury, inorganic bromide, Aflatoxins and any fungal and mould growth.

*Ramdev packaging is in 50g., against 100g. of the rest.