

Nutritional Blends with Mustard Oil

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SEAI Rapeseed-Mustard Conclave – 2017

24-25 March 2017

Jaipur, Rajasthan

Nutritional Blends with Mustard Oil

- India has the largest area and production of oilseeds in the world.
- Five major oil seeds viz., Groundnut, Sesame, Rapeseed /Mustard, Linseed and Castor seed occupied 212.24 lakh hectares , over 15% of the net area sown.
- With other oilseeds such as Soybean, Cotton seed, Sunflower, Safflower and Niger seed, total area under oilseeds is about 20% of the net area sown.

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- India has the largest area and the highest production of rapeseed and mustard in the world.
- Nearly 4-fold increase in their production in 3 decades from 1960-61 to 1991 after which varying trends of production have been noticed.
- The production reached the peak of 67 Lakh ton in 1996-97 after which production declined considerably: Only 39 Lakh ton rapeseed produced in India in 2002-3.
- Mustard acreage & production in 2012-13 stood at 63 Lakh hectares & 66 LT,
- Crossed 67 Lakh hectares & 78 LT in 2013-14.
- Output of mustard oil in 2012-13 stood at 23 LT,
- Reached 26 LT by the end of 2013-14, which is
- About 15% of India's total edible oil consumption of 175 LT.
- It is expected that total mustard oil output will touch 34 LT by 2020.

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- Mustard is a rabi crop, sown from Nov.
- Major mustard producing states: Raj., UP, Haryana, MP, Guj., Maharashtra.
- Rajasthan & UP major producers
- 53%+ of the total prodn. of India.
- UP traditionally largest producer but
- since 2002-03, Rajasthan is largest producer
- contributing about 50% of total output.
- Demand exceeds actual availability, causing
- Price volatility
- Rich source of Omega-3 and MUFA

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BLENDING OF EDIBLE OILS:

ECONOMY

HEALTH

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CARDIO VASCULAR DISEASE (CVD) IN INDIANS

- CVD (CHD & Stroke) is world's leading killer (16.7 million global deaths in 2003, 29.3% of global deaths).
- India accounts for 60% of global burden
 - 118 million in 2000, 214 million by 2025 (projected)
- Early age of onset in Indians
- Rapid urbanization, physical inactivity, increased incidence of diabetes & obesity, and unhealthy diet are the possible cause.
- Unique pattern of dyslipidaemia (atherogenic lipoprotein phenotype)

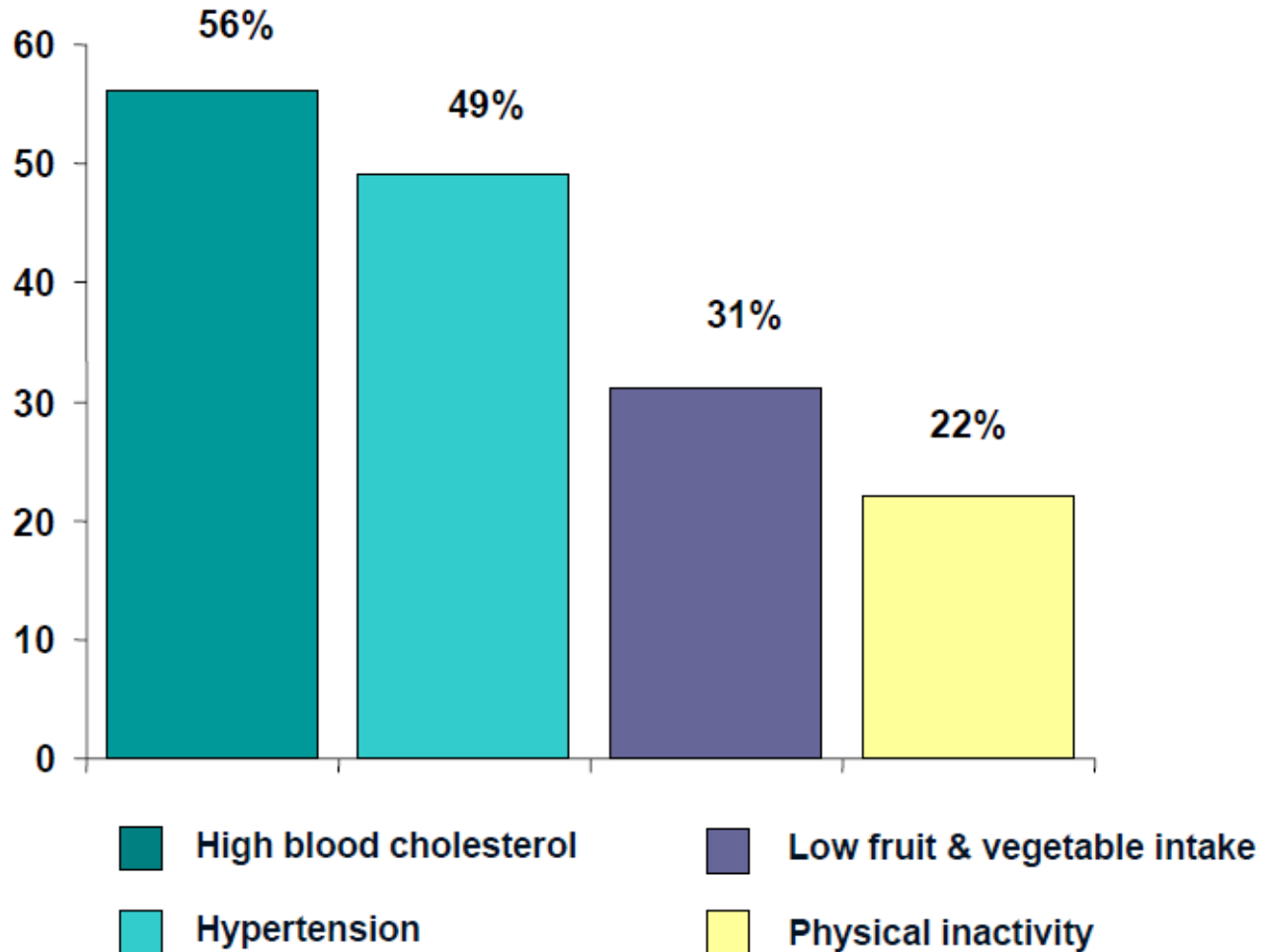
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ATHEROGENIC LIPOPROTEIN PHENOTYPE

- **High levels of Plasma Triglyceride (TG)**
- **Low HDL high LDL3 (small, dense LDL)**
- **Commonly observed in Diabetic & Metabolic Syndromes**
- **3-fold higher CVD risk.**

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Contribution of selected risk factors to CVD: high cholesterol a major factor



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MAJOR RISK FACTORS FOR CARDIO VASCULAR DISEASE

- **Cigarette smoking**
- **Diabetes**
- **Hypertension ($\geq 140/90$)**
- **Low HDL (<40 mg/dL)**
- **Family history of premature CVD in 1st degree relatives:**
 - <55 years for male relatives**
 - <65 years for female relatives**
- **Age: Men ≥ 45 years, Women ≥ 55 years**

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NUTRITIONAL FACTORS AFFECTING CVD

➤ Increases Risk:

Saturated Fatty Acids: Increase Total Cholesterol (TC)

Trans Fatty Acids: Increase LDL Cholesterol (LDLC)

Dietary Cholesterol: Increase TC

Obesity: Increase TC and LDLC

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NUTRITIONAL FACTORS AFFECTING CVD

➤ Decreases Risk:

Mono Unsaturated Fatty Acids (MUFA): Increase HDLC

Poly Unsaturated Fatty Acids (PUFA): Lower TC

Dietary Fiber (Soluble): Lower LDLC

Plant Sterols / Stanols: Lower LDLC

Weight loss: Lower LDLC

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CURRENT RECOMMENDED DIETARY FAT INTAKE

- **Total fat:**
 - 20-35 energy% : 40-70g/day max.
 - Richer in Mono & Poly Unsaturated Fatty Acids (MUFA & PUFA)
- **Saturated Fat (SAFA):**
 - <10 energy% : <20g/day max.
 - < 7 energy% : <14g/day in High Risk Individuals
 - Restrict intake of Red Meat, Butter, Cream & high-fat dairy prods.
- **Mono Unsaturated Fat (MUFA):**
 - 15-20 energy% : 30-40g/day
- **Trans Fat (TFA):**
 - <1 energy% : 2g/day max.
 - No nutritional value, selectively increases LDL Cholesterol
 - Limit intake of comml. bakery prods., deep-fried foods, fast foods.

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CURRENT RECOMMENDED DIETARY FAT INTAKE (contd.)

➤ Poly Unsaturated Fat (PUFA):

<10 energy% : 20g/day max.

of which,

Omega-6 PUFA:

Min. 3 energy% : 6g/day

Omega-3 PUFA:

0.6-1.2 energy%: 1.2-2.4g/day

Omega-6: Omega-3 ratio: 5-10.

➤ Cholesterol:

<300mg/day max

<200mg/day max in high-risk individuals

Avoid egg-yolk, red meat and high fat dairy products

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FAT COMPOSITION OF COMMON EDIBLE OILS

Vis-a-Vis

**Latest Recommendations by : National Institute of Nutrition (NIN), Hyderabad -
a premier Nutrition Research Institute of Indian Council of Medical Research
(ICMR), Government of India**

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Recommended*	Fatty Acids % by Weight			Essential Fatty Acids	Remarks	
	Saturated fat (SFA)	Poly-Unsaturated fat (PUFA)		Mono-Unsaturated (MUFA)		
	27-33%	Omega ₆ 20-26%	Omega ₃ 03-07%	33-40%		
Desi Ghee/Butter Fat	67	03	02 01	30	2	Very high SFA, Contains undesirable cholesterol
Yanaspati Ghee	60	00	00 00	40	-	
Palm Oil	50	10	10 00	40	-	High SFA & No Omega ₃
Kardi Oil/Safflower Oil	09	78	78 00	13	-	
Sunflower Oil	12	69	68 01	19	68	Very high PUFA & High EFA ratio
Flaxseed Oil	10	69	16 53	21	0.3	
Soyabean Oil	15	61	54 07	24	8	Very high PUFA

*Source : Report of WHO-NIN Workshop on Dietary Fats & Non-Communicable Diseases, July 7-8, 2005, held at NIN, Hyderabad

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Walnut Oil	16	56		28	10	Very High PUFA
		51	05			
Cotton Seed Oil	26	55		19	54	Very high PUFA & High EFA ratio
		54	01			
Sesame Oil	13	46		41	45	High PUFA & High EFA ratio
		45	01			
Olive Oil	16	11		73	10	Low smoke point, hence not good for frying
		10	01			
Almond Oil	10	29		09	13.5	Ideal fat composition
		27	02			
Mustard Oil	03	29		68	1	High levels of undesirable Erucic acid
		15	14			
Canola Oil	06	32		62	2	Very high Omega, Hence not good for frying
		22	10			
Groundnut Oil	22	33		45	32	Ideal fat composition
		32	01			
Rice Bran Oil	22	35		43	22	Most ideal fat composition, better frying stability and unique health benefits
		33.5	1.5			

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	Fatty Acids % by Weight				
	Saturated	Poly Unsaturated		Mono Unsaturated	Omega-6: Omega-3
		Omega-6	Omega-3		
Recommended	27-33%	27-33%		33-40%	5-10
		20-26%	02-07%		
Mustard-Palm (1:1)	27	20	7	54	3
Mustard-Soybean (20:80)	13	46	8	33	5.5
Mustard-Cottonseed (30:70)	19	42	5	34	8
Mustard-Groundnut (1:1)	14	31	8	56	4
Mustard-Rice Bran (30:70)	16	28	5	51	5

Thanks