

SEAI Rapeseed-Mustard Conclave – 2018

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Health Benefits of Mustard Oil
With Special Reference to
Nutritional Blend with Mustard / Canola Oils

By

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Importance of 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.

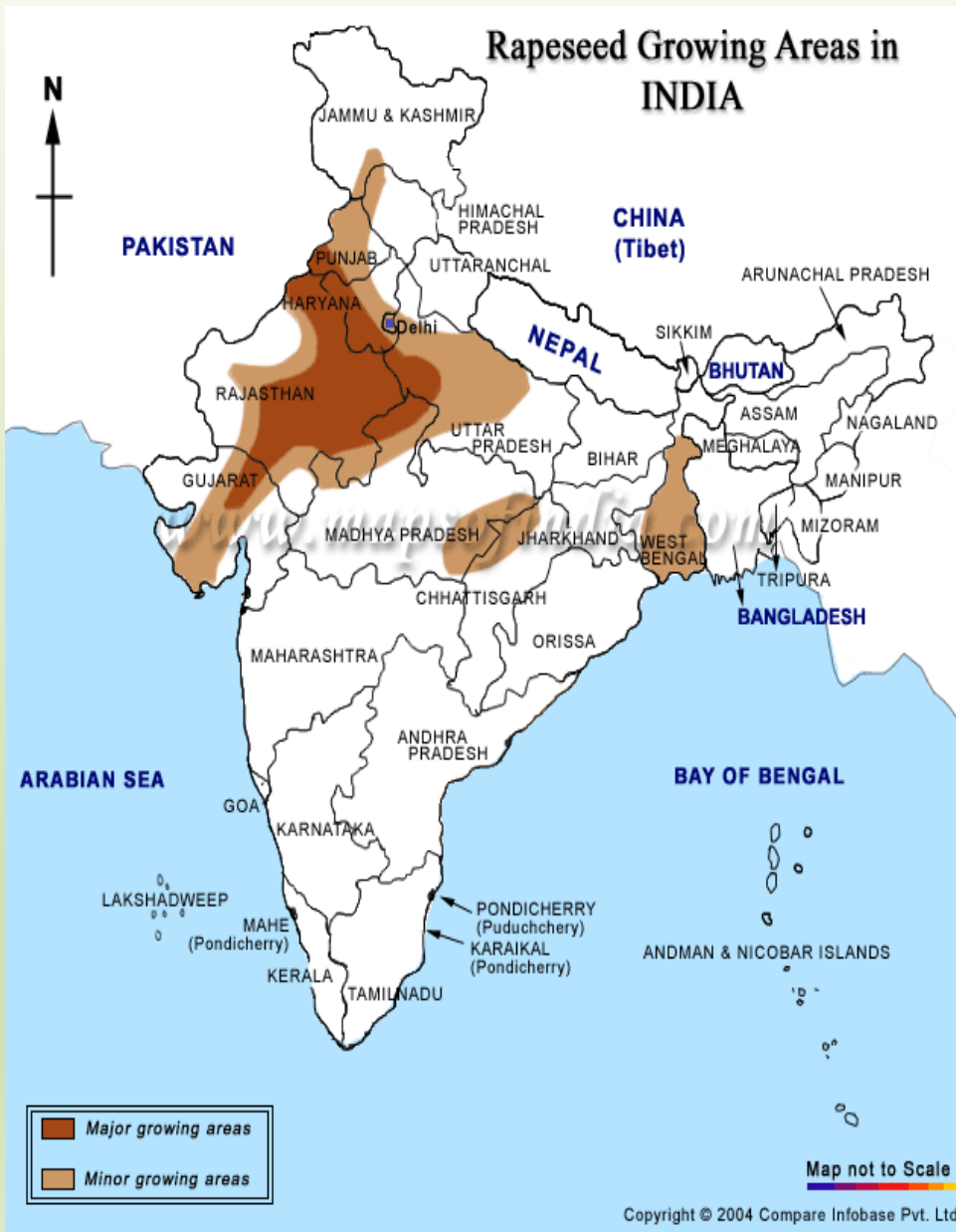
Importance of Mustard Oil

- 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 Lakh ton,
- Crossed 67 Lakh hectares & 78 Lakh ton in 2013-14.
- Output of mustard oil in 2012-13 stood at 23 Lakh ton,
- Reached 26 Lakh ton by the end of 2013-14, which is
- About 15% of India's total edible oil consumption of 175 Lakh ton.
- It is expected that total mustard oil output will touch 34 Lakh ton by 2020.

Importance of Mustard Oil



Importance of Mustard Oil



- 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

Health Benefits of Mustard Oil

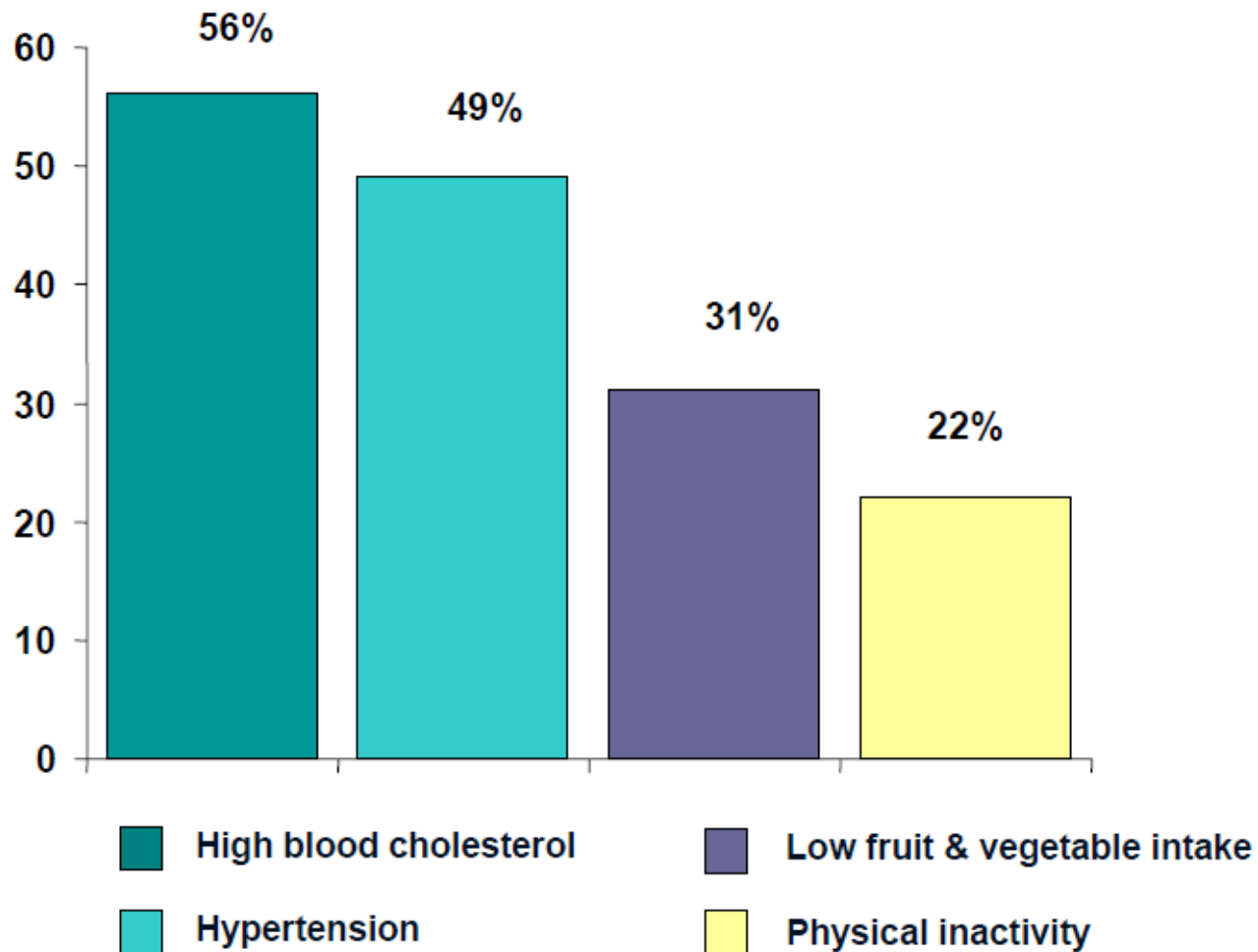
CARDIO VASCULAR DISEASE (CVD) IN INDIANS

- 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)

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.

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



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

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

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

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.

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

FATTY ACID COMPOSITION OF COMMON EDIBLE OILS IN India

Vis – a – Vis

LATEST Dietary Recommendations by the National Institute of Nutrition (ICMR-NIN), Hyderabad.

	Saturated Fatty Acids	Poly Unsaturated Fatty Acids		Mono Unsaturated Fatty Acids	Omega-6 : Omega-3
	(SFA)	(PUFA)		(MUFA)	
Recommended	27 - 33%	27 - 33%		33 - 40%	
		Omega-6	Omega-3		
		20 - 26%	03 - 07%		
Dairy Ghee / Butter	67	2	1	30	2
Palm Oil	50	10	0	40	--
Sunflower Oil	12	68	1	19	68
Soybean Oil	15	54	7	24	8
Cottonseed Oil	26	54	1	19	54
Rice Bran Oil	22	34	2	43	22
Mustard Oil	3	15	14	68	1
Canola	6	22	10	62	2

Nutritional Blends with Mustard Oil

BLENDING OF EDIBLE OILS:

- ECONOMY
- HEALTH

Nutritional Blends with Mustard Oil

	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

Nutritional Blends with Canola

	Fatty Acids % by Weight				
	Saturated	Poly Unsaturated		Mono Unsaturated	Omega-6: Omega-3
		Omega-6	Omega-3		
Recommended	27-33%	27-33%		33-40%	05 - 10
		20-26%	02-07%		
Canola-Palm					
50-50	28	16	5	51	3
75-25 *	17	19	8	57	3
80-20 *	15	20	8	58	2
Canola-SBO					
20-80 *	13	48	8	32	6
60-40 *	10	35	9	47	4
80-20 *	8	28	9	54	3
Canola-RBO					
20-80 *	19	31	3	47	10
50-50 *	14	28	6	53	5
60-40 *	12	27	7	54	4
75-25 *	10	25	8	57	3
80-20 *	9	24	8	58	3
Canola-SFO					
20-80	11	59	3	28	21
30-70	10	54	4	32	15
50-50 *	9	45	6	41	8
70-30	8	36	7	49	5

Thank
you