



# **NUTRITIONAL ASPECTS OF RICE BRAN OIL**

By:

Dr. A.R. Sharma, Chairman,  
Ricela Health Foods Ltd., India

&

SEA Rice Bran Oil Promotion Council



# WHAT IS RICE BRAN OIL?



..a unique cooking oil  
produced  
from

**RICE -BRAN**



# PHYSICAL PROPERTIES OF REFINED RICE BRAN OIL

- ✓ **Golden yellow colour**
- ✓ **Absolutely odourless**
- ✓ **Maintains natural flavour  
of food cooked in it**
- ✓ **Uptake is less by 5-15 %**





**RICE BRAN OIL  
VIS-À-VIS  
CURRENT DIETARY FAT RECOMMENDATIONS**



# RECOMMENDED CALORIE INTAKE FROM VARIOUS TYPES OF FATS

**Saturated Fatty Acids (SFA) : 8-10% of total calorie intake**

**Poly-Unsaturated Fatty Acids (PUFA) : 8-10% of total calorie intake**

**Mono-Unsaturated Fatty Acids (MUFA) : 10-12% of total calorie intake**

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



# DESIRABLE FAT COMPOSITION

**Saturated Fatty Acids (SFA) : 27-33% of total fat intake**

**Poly-Unsaturated Fatty Acids (PUFA) : 27-33% of total fat intake**

**Mono-Unsaturated Fatty Acids (MUFA) : 33-40% of total fat intake**



## FAT COMPOSITION OF COMMON EDIBLE OILS`vis-à-vis DESIRABLE FAT COMPOSITION

Type of Edible Oil	Fatty Acids % by Weight			Remarks
	Saturated Fat ( SFA) 27-33%	Poly-unsaturated Fat (PUFA) 27-33%	Mono-unsaturated Fat ( MUFA) 33-40%	
Palm Oil	50	10	40	High SFA
Butter Fat	67	03	30	Very high SFA, Contains undesirable cholesterols.
Hydrogenated fat	60	00	40	Very high SFA, Contains undesirable Trans-Fatty Acids

**Note :-** Value of Fat composition of different oils are based upon literature values.



# SFA / PUFA / MUFA

Type of Edible Oil	Fatty Acids % by Weight			Remarks
	Saturated Fat ( SFA) 27-33%	Poly-unsaturated Fat (PUFA) 27-33%	Mono-unsaturated Fat ( MUFA) 33-40%	
Safflower Oil	9	78	13	Very high PUFA
Sunflower Oil	12	69	19	Very high PUFA
Corn Oil	13	59	28	Very high PUFA
Cotton Seed Oil	26	55	19	Very high PUFA
Sesame Oil	13	46	41	High PUFA
Soyabean Oil	15	61	24	Very High PUFA

**Note :-** Value of Fat composition of different oils are based upon literature values.





# SFA / PUFA / MUFA (contd..)

Type of Edible Oil	Fatty Acids % by Weight			Remarks
	Saturated Fat (SFA) 27-33%	Poly-unsaturated Fat (PUFA) 27-33%	Mono-unsaturated Fat (MUFA) 33-40%	
Mustard Oil	3	29	68	High levels of undesirable Erucic acid
Canola Oil	6	32	62	Very high Omega-3, hence not good for frying
Olive Oil	16	11	73	Only Extra-virgin variety has desirable levels of polyphenols
Peanut Oil	22	33	45	Ideal fat composition
Rice Bran Oil	24	34	42	Ideal fat composition and unique nutrients i.e. Oryzanol and Tocotrienols

**Note :-** Value of Fat composition of different oils are based upon literature values.



Recent International research  
presents Oryzanol as  
a wonder nutrient



- Human clinical studies conducted in the University of Lowell found that Rice Bran oil has significantly better cholesterol lowering properties than popular Olive Oil. Scientists have attributed this to presence of Oryzanol in the oil.

*Source:- Arterioscler Thromb Vasc Biol. (Journal of American Heart Association) 1994;14:549-556, Artherosclerosis, volume 88, Issues 2-3, June 1991, pages 133-142*

- In a study conducted by National Institute of Nutrition, Indian Council of Medical Research, Rice bran oil showed greater reduction in bad cholesterol in comparison to groundnut oil which has the similar fatty acid profile. Scientists have attributed this to Oryzanol.

*Source-Journal of the American College of Nutrition, Vol. 10, No.4- (1991)*





- A recent human Clinical Study conducted by Indian Council of Medical Research has found that the blend of Rice Bran Oil and Sesame Oil in the ratio of 80:20 to be really effective in reducing Hypertension. The researchers believe this effect is mainly due to antioxidants present in the Sesame Oil and Oryzanol in Rice Bran Oil.

*Source:- A Hindustan Times Newspaper report published on 23<sup>rd</sup> September, 2012*





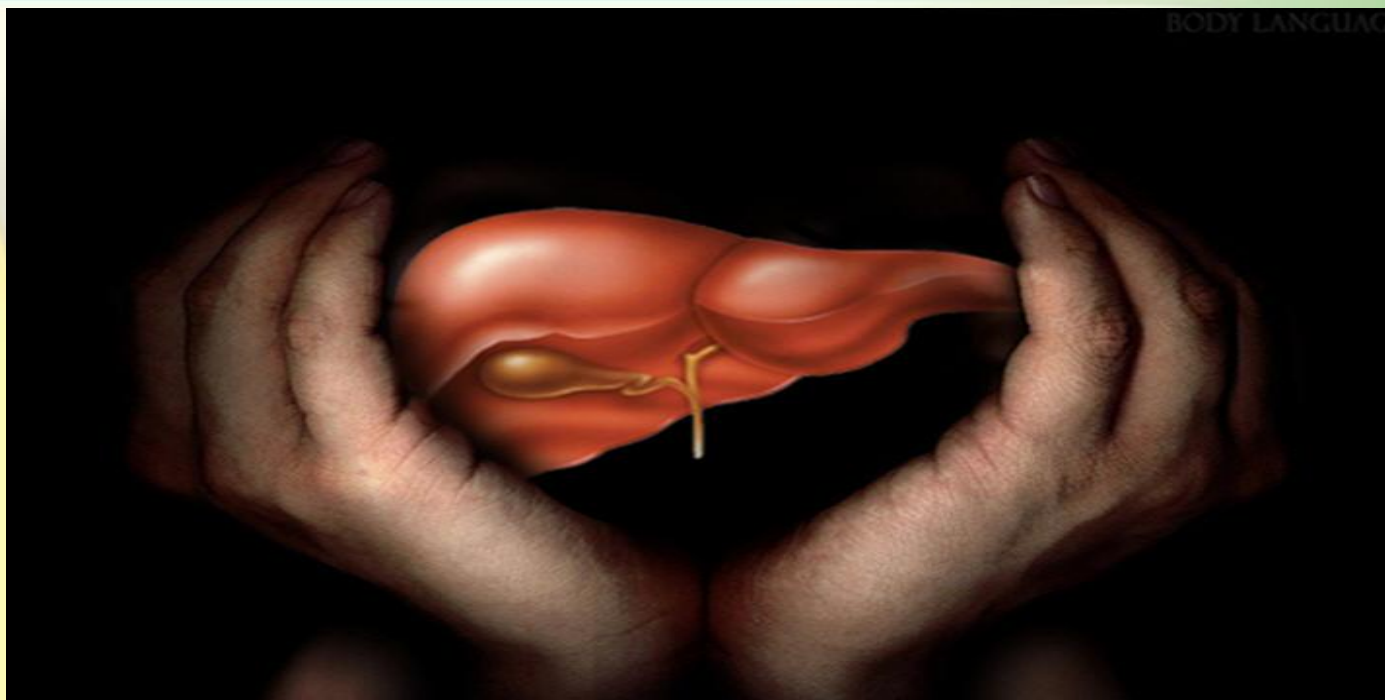
- A study conducted in Taiwan found out that Rice Bran Oil, containing Oryzanol, may improve lipid abnormalities, reduce the atherogenic index, and suppress the hyperinsulinemic response in rats with streptozotocin/nicotinamide-induced T2DM.

*Source:- Journal of Clinical Biochemistry and Nutrition, Japan, 45, 29-36, July 2009*

- In a study conducted by Nirma University, India, Oryzanol has been found to have protective effect on hyperalgesia and oxidative stress which might be responsible for diabetes induced nerve damage or the disease called Diabetes Neuropathy.

*Source:- Brazilian Journal of Pharmacognosy [online], 2012, 1092-1103. Epub Sep 06, 2012.*





- Studies conducted by Nagasaki University, Japan suggest that Y-Oryzanol is very effective against liver cirrhosis. Studies have attributed this to the effective antioxidant property of Oryzanol.

*Source:- Journal of Clinical Biochemistry and Nutrition, Japan, 12, 193-199, 1992*

- A study by Tokyo University, Japan revealed that Oryzanol has a protective effect against alcohol-induced liver damage. It inhibited the oxidative stress which is a prime reason for liver damage.

*Source:- C. Chotimarkorn, H. Ushio Phytomedicine 15 (2008) 951-958*

**Protects Liver**



Relief from  
Gastrointestinal  
distress

- A study in Japan found out that an 8-day treatment with gamma-oryzanol showed a significant inhibition of fasting ulcer and a 10-day treatment with the same dose of gamma-oryzanol in acetic acid ulcers lowered the serum level of gastrin.

*Source:- Journal of Folia Pharmacologica Japonica 1976 Nov;72(8):1001-11*

- Another study in Japan reported that the oryzanol is effective against the stress induced ulcers.

*Source:- Journal of Folia Pharmacologica Japonica 1976 May; 72(4):475-81*



## Anti-inflammatory

- A study by Department of Food Science and Technology, Tokyo found that treatment with Oryzanol during the entire time course of treatment of colitis (swelling of the Intestine), suppressed the pathological conditions, including body weight loss, intestinal bleeding and diarrhoea, resulting in significant amelioration of intestinal inflammation.

*Source:- British Journal of Pharmacology (2008) 154, 812-824*

- A study conducted by Department of Pharmaceutical Sciences, Thailand yet again confirmed the anti inflammatory properties of Oryzanol.

*Source:- Journal of Medicinal Plant Research Vol.6(6), pp. 1070-1077, 16 February, 2012*





- Clinical trials involving menopausal women, have revealed that 67-85 percent of women treated with gamma-oryzanol have experienced a significant reduction in menopausal symptoms.

*Source:- A Research Article taken from [http://www.meschinohealth.com/ArticleDirectory/Gamma-Oryzanol\\_Menopause\\_Treatment](http://www.meschinohealth.com/ArticleDirectory/Gamma-Oryzanol_Menopause_Treatment)*

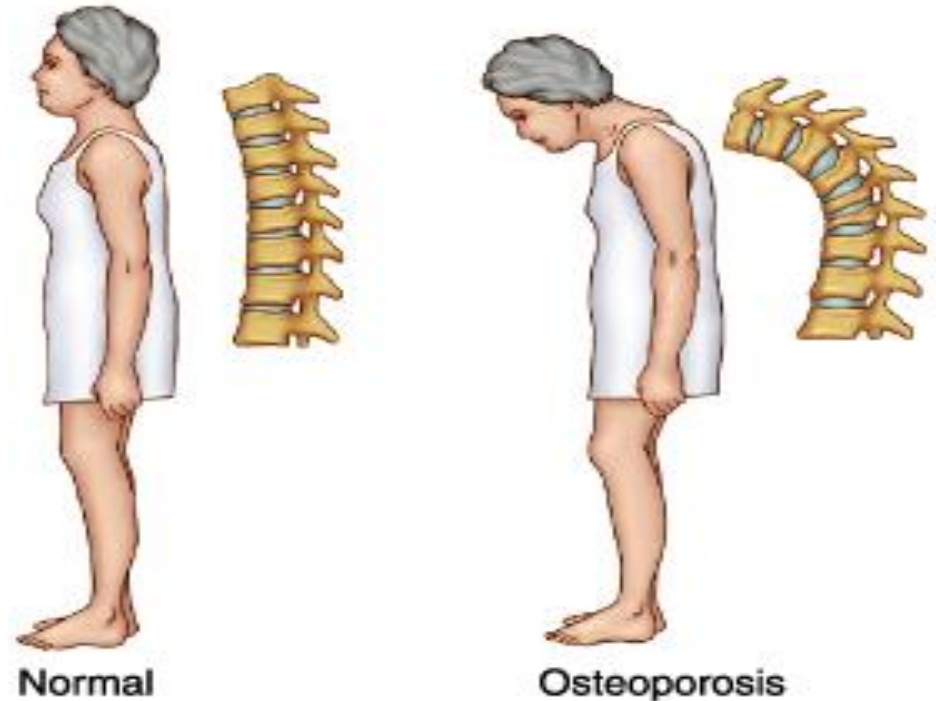


Treats menopausal symptoms



- A study conducted on Ovariectomized rats (who typically lose substantial bone mineral density after the ovariectomy) were used as a model for postmenopausal osteoporosis. It was found that the addition of a 7% oryzanol rice bran oil (RBO) concentrate to the diets of ovariectomized rats resulted in less bone loss at several bone sites than control rats.

*Source:- A thesis submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College*



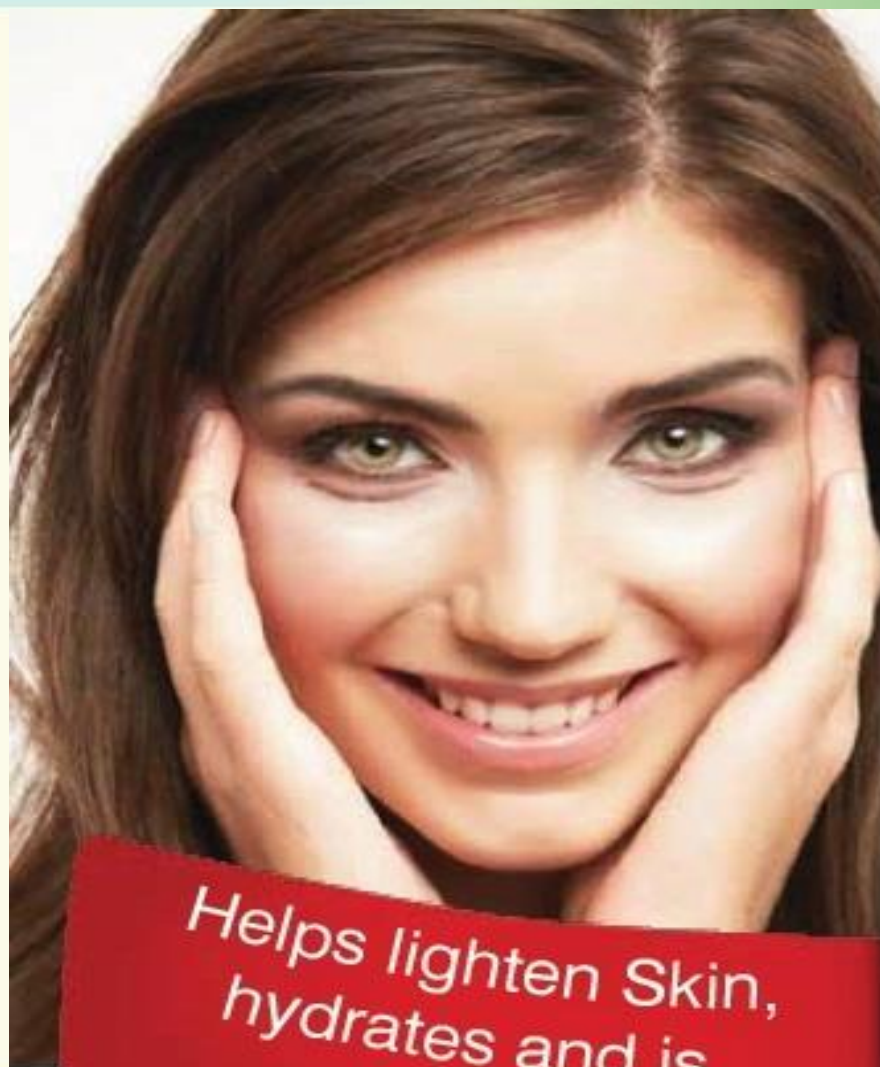
Helps patients of  
Osteoporosis



- A study in Chiang Mai University, Thailand has found Oryzanol as a potential cosmetic raw-material. According to the study, Oryzanol helps in skin whitening, skin hydration and is anti ageing.

*Source:- Journal of Pharmaceutical Biology, Thailand 2012 Feb;50(2):208-24*

- Oryzanol, due to its antioxidant property, is an effective Sunscreen and thus protects the skin from U-V Rays.

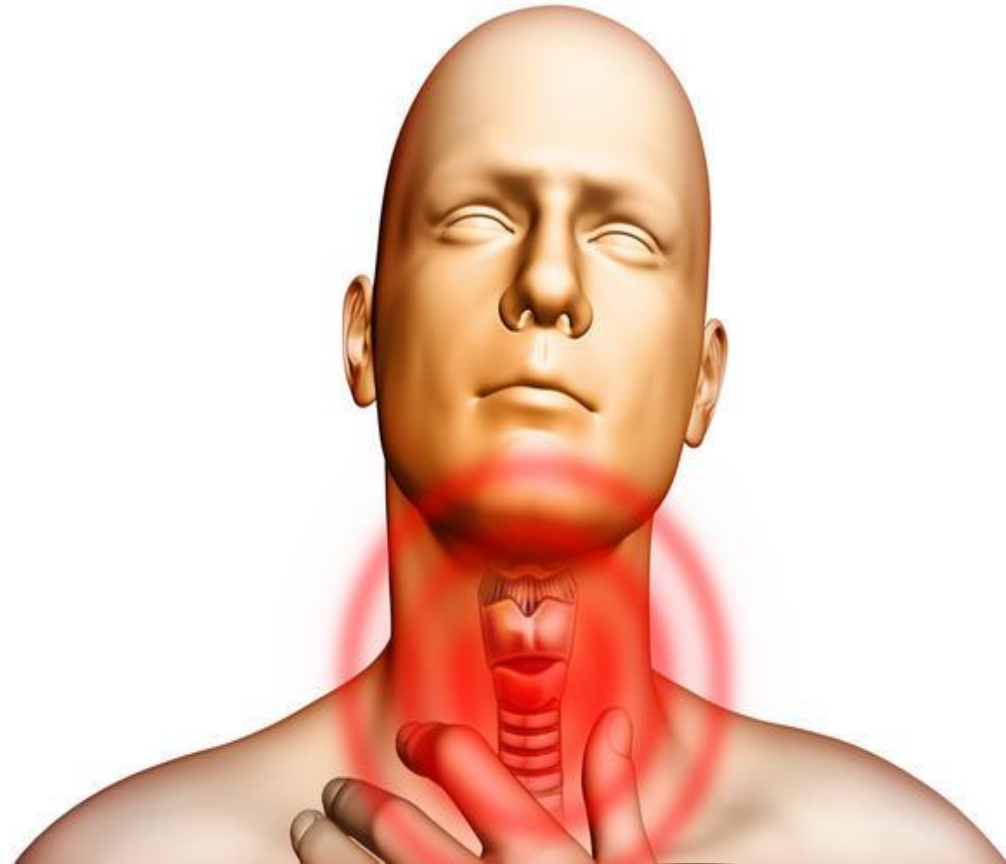


Helps lighten Skin,  
hydrates and is  
anti- ageing



- A study conducted in Japan has found a single oral dose (300 mg) of gamma-oryzanol extracted from rice-bran oil to be effective, in significantly reducing elevated serum TSH levels in hypothyroid patients.

*Source:- Journal of Endocrinologia Japonica, Japan 1980 Feb 27(1):83-86*

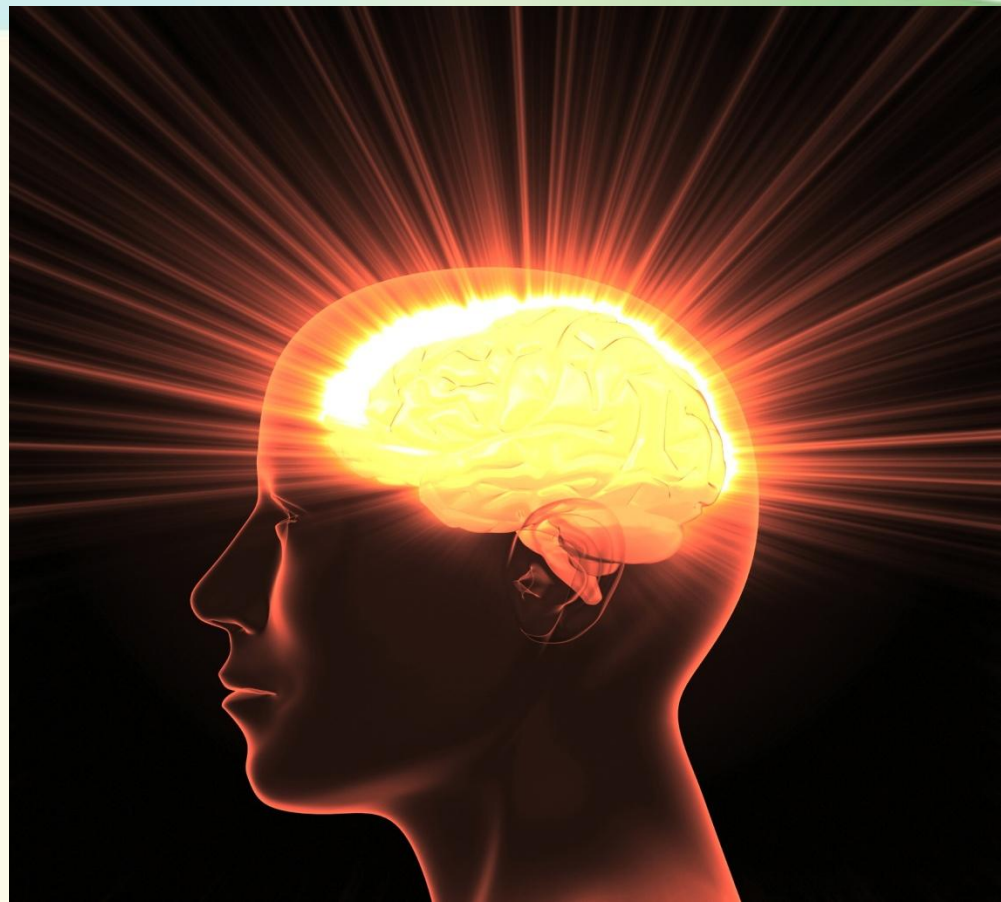


Helpful for patients  
of Hypothyroid



- Several studies have shown gamma oryzanol to be as effective as many drugs. In reducing objective, systematic effects of stress.
- A joint study by the University of Kentucky, USA and University of Catania, Italy has revealed that Oryzanol (which is a Ferulic Acid Ethyl Ester) has therapeutic ability to protect body from oxidative stress-related neurodegenerative disorders like Alzheimer.

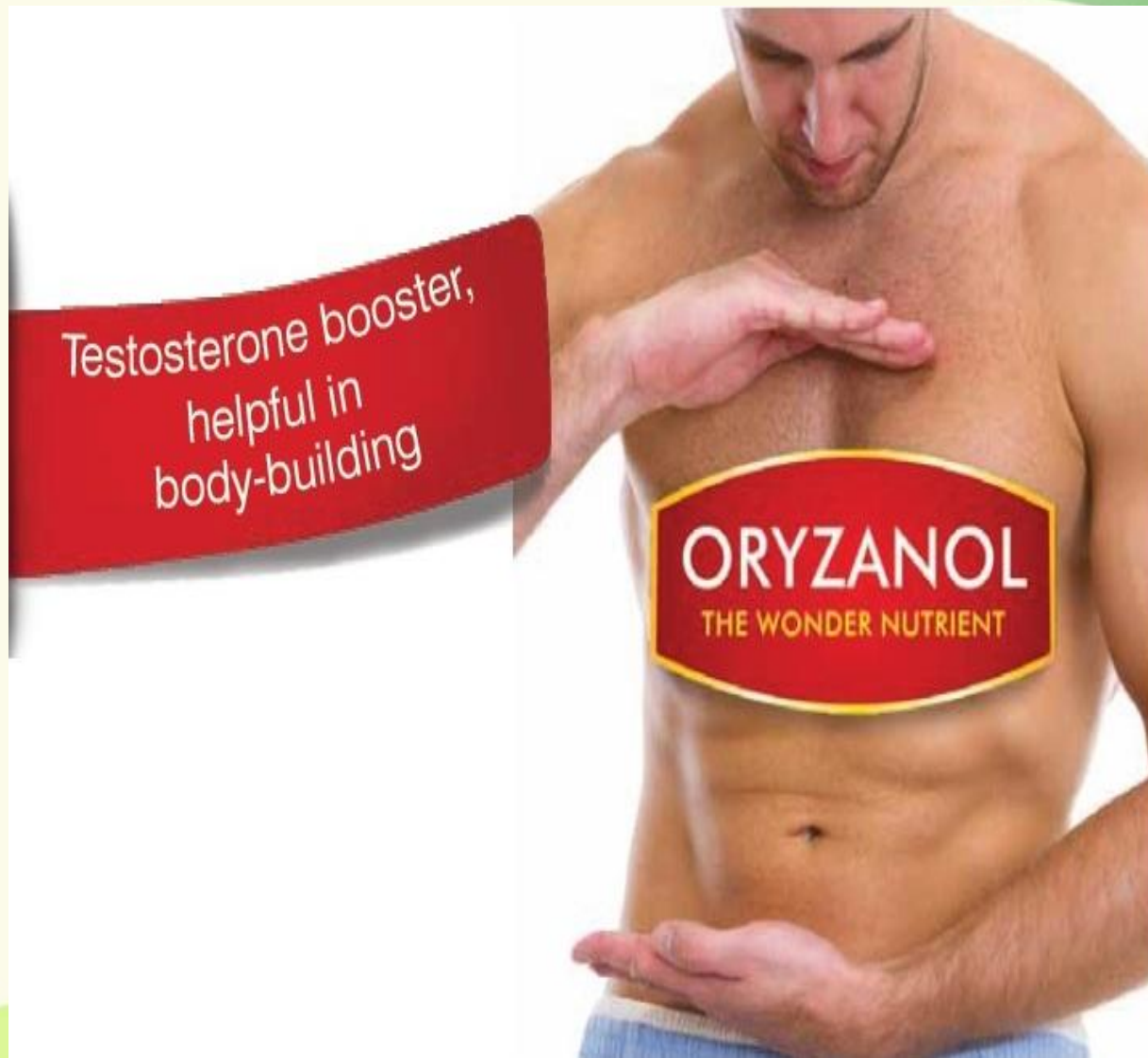
*Source:- Journal of Neurochemistry International 48 (2006) 318-327*



**Neuro-Protective**



- An unpublished study by Bucci, L., Stiles, J., Sparks, W., and DeLuca, D., 1987, compared anabolic steroid users to those athletes supplemented with gamma oryzanol. Initially, the anabolic steroid users showed greater gains in girth measurements, but by 16 weeks, the gamma oryzanol users exhibited greater girth measurement increases than all steroid users, without ANY side effects! And the dose of gamma oryzanol is low.
- These findings have created an interest in using Y-oryzanol as a sports supplement. Companies in U.S. are selling Oryzanol based Health Supplements for Body building.





## TO CONCLUDE.....

- Use of Rice Bran Oil as a sole cooking medium is a convenient and healthier option



**Wish you a happy and healthy  
life with Rice Bran Oil**





**THANK YOU**