

INGREDIENTS

BUSINESS

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**Oil Blends
Are More
Healthy Than
Single Oils**

Exclusive Interviews

Anil Jain, SA Pharmachem

Prakash Chawla, Kamani Oils



Oils for Nutrition and Health care

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PROFILE



'Middle Class Indians are Not Necessarily Price Conscious!'

06

10

'Use of Trans Free Shortening is Bound to Go Up!'



FOCUS

COVER STORY



Why Oil Blends are more healthy than Single Oils

14

16

COLUMN

Bakery Shortening for Puffs



30

हिंदी विभाग

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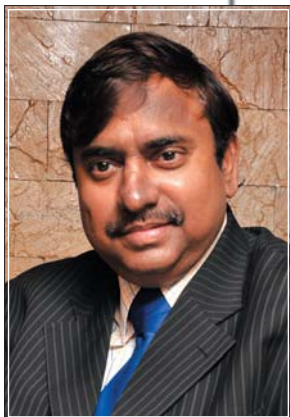
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Dear Reader,

Greetings and welcome once more to **Ingredients Business**! It is extremely heartening to receive such a warm and positive response from so many of you in the bakery business. This is just our third issue, and yet we feel we have grown by leaps and bounds; and not least because of your active participation in telling us what you liked and what you didn't and what you hoped to see more of in future issues. As for this issue, the focus is on oils and fats, other lipids and nutraceuticals and speciality ingredients. To start with, we have two exclusive interviews with the directors of two stalwart companies in the food industry: Kamani Oils dealing in oils and fats and SA Pharmachem, dealing in speciality ingredients. These are two companies - one that is generations old, and the other that was recently established that have done well for themselves in the food business and are worthy of being studied and emulated. We also have an exclusive article on amino acids and their use in the bakery industry. Another article holds forth on the benefits of oil blends as opposed to single oils. And our regular column by Vivekanand Ojha looks at bakery shortenings designed for puffs. And we also have a write up on the importance of lipids and their use, and a further article on the latest research which states that surfactants in food could be causing quicker break down of protein-coated lipids. In our Hindi section, we have a write up on nutraceuticals and how they are helping build more health-enhancing food products. Another article comments on the need for using nutraceuticals beyond the four Bs - beverages, bars, baked goods and breakfast foods. Prune puree may be an effective fat replacer in cakes, says the latest research. And last but not the least, we have a story on a Canadian student who won the Governor General's Award in Ottawa for his innovative research into edible fats and oils that could some day replace harmful fats in foods such as margarine, chocolate and butter. I wish you happy reading!

Satya Swaroop



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'Middle Class Indians are Not Necessarily Price Conscious!'

Anil Jain, Founder and Director, SA Pharmachem



S.A.Pharmachem started operations in 1987 by marketing products such as maize starch, sorbitol and other products required by the pharmaceutical industry. It was soon expanded to include the textile industry and also other sectors such as foods and nutraceuticals, excipients, antioxidants and sweeteners. Currently one of the fastest growing Speciality Food & Pharma Ingredients marketing company in India with a turnover of Rs. 70 crores and a year-on-year growth rate of over 28%, SA Pharmachem represents the best global manufacturers exclusively for the Indian sub continent and the Asia Pacific region. In an exclusive interview with *Ingredients Business*, SA Pharmachem founder and Director, **Mr. Anil Jain** talks about the hundred-crore-plus company and its association with the food sector, particularly the bakery industry.

Mr. Jain, you must be proud of how well SA Pharmachem has done. And it must be all the more special because you are a first generation entrepreneur...

I am a first generation entrepreneur. My father was a pharmacist. I, myself, was trained as a chartered accountant. But I had this fire in my belly. I was determined to start something of my own. I started with a company with Gangwal Chemicals, which is still running, and then founded SA Pharma along with a couple of my friends. And yes, I am proud of what SA Pharmachem has achieved in such a short time.

The food sector has been one of your mainstays. What do you have to say about the bakery industry today?

It's certainly come a long way. With rapid industrialization and urbanization, people are turning more and more to baked products than ever before. It is one of the fastest growing segments in the food industry and the future looks very bright. But yes, there are certain issues of concern. Health and nutrition are still not a major focus for various reasons. In India, either we're overfed or we're malnourished. There is still no major focus on making products that are high on nutrition and not just on taste. One major reason that is cited is cost. Indians are cost-conscious, we say. But I don't know how true that is. And it depends on the segment you are talking about. If we're talking about the organized sector catering to the middle class and above, that is not necessarily true. So investing in products that are high on nutrition and low on calories should not impact on the price per packet of the product. For instance, a biscuit brand that costs Rs.10 or Rs.15 a packet, if it goes up by 50 paise, or even a rupee, that does not alter consumption so much. Maybe marketing people will disagree with me, but I keep speaking to people I have spoken to all my employees, and all of them, without an exception, said they would not mind paying one rupee more for their favourite brand of bakery product. And there's a business opportunity there. You create awareness about a certain health benefit that your product caters to, and you will stand above the rest.

But does this apply to the unorganized sector and the lower income classes?

With the unorganized sector, their volumes are low, so it is not so easy. And if it is catering to the lower



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Proteins

Casein Protein Hydrolysate, Whey Protein Concentrate, Whey Protein Hydrolysate.

Polyols

Erthritol, Lactitol, Mannitol, Xylitol.

Food Additives

Calcium Caseinate, Sodium Caseinate.

Sweeteners

Intense: Acesulfame - K, Sucralose.

Natural : Fructose, stevia



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income group, then yes, they are definitely more price-conscious. But what I'm trying to say is that, it is also about a mindset, it is also about a desire. You have to want to make your products healthier for the sake of your consumers, for the sake of society, for the sake of the country. Let's say, you're a bakery and you make very tasty pastries and they sell like, well, hot cakes! So you're doing very well. You don't feel the need to change or experiment. And that's what is unfortunate, in some ways. Because most of these products still have a long way to go in terms of nutritional content, especially by international standards, but perhaps we are not trying hard enough.

And this is true for both the organized as well as the unorganized sector?

Yes, I would think so. Baked products need to be high on nutrition. For instance, it is a myth that Indians don't require fibre. If you look at the urban upper middle class, their children are huge consumers of junk food. My son ends up eating burgers and pizzas when he's in college. So then where does he get fibre from? So bakeries, etc. need to incorporate fibre and protein in their products. To increase nutrition and reduce calories. Let's not forget, India has the highest number of cardiac cases. And diabetes too. So all of us who are in the industry need to take our societal responsibilities seriously.

But do you think the government is doing enough in this regard?

Well, it is doing what it can but definitely, more needs to be done. For instance, the PFA (Prevention of Food Adulteration) Act has been around since 1954. All manufacturers need to adhere to the ingredients that are listed in it. At times, what happens is that there is an ingredient that is developed which has great health benefits but manufacturers may not be able to take advantage of it unless it is listed in the PFA, but that may take a while, a few years even. So yes, there are all these

concerns but if we all work together, it is not difficult to address them.

But there is also a growing awareness among the consumers about health and nutrition.

Exactly. And this is only going to become more and more heightened in the years to come. It is a good thing for all of us, because it will force us, whether we like it or not, to be focused on delivering products that are ultimately healthier, tastier, better.

What, according to you as a first generation entrepreneur, are the major difficulties in starting a company in this country?

Cheaper finance. That's the most difficult thing. I don't think there's a dearth of ideas or motivation or any of these things. But getting funds is still a major problem. It's a little better than what it was a decade or two ago because today, at least you don't need collateral. But it is still a big problem. If I had easy access to funds, I think SA Pharmachem would have grown to be four times what it is today. But you know, finding funds is difficult everywhere. But in the west, they have venture capitalists for instance. In India, that trend is yet to catch up.

What are the pros and cons of being a first generation entrepreneur?

Well, the pros are that we first generation



entrepreneurs are hugely driven, we have a fire in our belly, we have the desire and the energy and the belief to see something through and we won't give up no matter how many times we fall. As for the cons, well, we don't trust so easily. We don't know how to delegate and trust people to get the job done. We would rather do everything ourselves.

This country needs a lot of first generation entrepreneurs, don't you think?

Oh yes, absolutely. I wish there was a way, a system, of nurturing potential first generation entrepreneurs. Because they are the ones with the ideas and they are the ones with the passion. They may lack experience, but that will come. And their passion and drive more than makes up for their initial lack of experience.

Do you think there is scope for first generation

entrepreneurs in the bakery industry?

Certainly. It is not a saturated market. It is a high growth market in fact. For instance, on a Sunday, you will see many Gujaratis queuing up to buy 100 gms or 250 gms of fafras. That's a business opportunity. If the quality is good, I'm quite happy to go out and buy fafras. I don't necessarily want my wife to make them at home. Now fafras are not a baked product but it very well applies to any baked product. If you can ensure quality and taste, you can go a long way.

The rising consumption of burgers and pizzas - has that meant more business for SA Pharmachem?

No. That has meant more business for enabler companies, such as emulsifiers and stabilizer manufacturers. But we're into speciality ingredients and we are focused exclusively on health and nutrition. Most of the ingredients we deal in, such as dietary fibres like polydextrose, have not yet been included in the PFA list, although they have become popular and necessary health-enhancing ingredients in the bakery industry in the west. But we are hopeful that the government will include these essential ingredients soon, for the ultimate benefit of consumers.

What are your future plans for SA Pharmachem?

We would like to get into more and more distribution in the food segment, and manufacturing in the feed segment. We would also like to get into setting up a starch processing facility.

Who are the people you admire?

My father for his hard work and honesty and integrity. And also, Dhirubhai Ambani, for changing the face of Indian business.

What are the qualities that you admire in people?

Honesty, hard work and commitment, in that order. Intelligence is important too, but that comes with experience. ■





'Use of Trans Free Shortening is Bound to Go Up!'

Prakash Chawla, Director, Kamani Oils

Kamani Oils is India's foremost producer of speciality oils and fats with an annual turnover of Rs. 550 crores. It has over four decades of experience in processing oils and fats, with a strong focus on R&D and product application, and has India's first HACCP certified vegetable oil refinery. We spoke to **Mr. Prakash Chawla**, Director, Kamani Oils, about the company and the state of the bakery industry today.



Tell us a little about Kamani Oils.

Kamani Oils is the leading producer of speciality oils and fats. Oils and fats are critical ingredients in any food application. They help make the food nutritious and enhance its taste. We offer a wide spectrum of oils and fats to suit every customer's needs. We are immensely focused on R&D and product application in our efforts to constantly innovate and bring out products that are more nutritious and affordable. In fact, the whole focus of Kamani oils is to be able to research and develop products that are tastier, healthier and affordable. Our products find diverse applications in areas like bakery, ice cream, confectionery, catering, snack food, frying, pharmaceuticals and health food. We

also produce tailor-made speciality products for specific end-use applications. Our prime focus is food safety and towards this end we are now ISO 22000 certified.

What do you think of the bakery industry?

The bakery sector, like the rest of the food industry today, is a high growth sector. At present, it is dominated by the unorganized sector which is more taste conscious than health conscious. And it is difficult for them, because the market is extremely price competitive, and the profit margins are low. It is difficult for the bakeries to absorb even a small increment in cost, and they can't pass it on so easily to the consumers. But things are changing

dramatically, I think. Consumers are becoming more and more health conscious. The Food Safety Law that's coming in will mean healthier products and cleaner practices. There'll be better information, better laws, and greater organization within the industry.

So the future bodes well...

Yes, definitely. The industry is going to be a lot more organized. The small bakeries will scale up. They will become more health conscious. They have no choice. Consumers are becoming increasingly health conscious. And not just the upper-end consumers but the lower end ones too. And the laws are going to be stricter. So yes, both the small and

big players will have to be more health conscious. Which can only bode well for everyone. Also consumption is on the increase in total volume terms. The younger generation, especially in the urban areas, is consuming more bakery products. Across the world, there's a certain homogeneity amongst the younger generation in terms of their consumption habits. Pizzas and burgers are popular with this generation anywhere in the world and it's no exception here. So the industry will see high growth. And healthier and tastier products.

Any concerns?

Well, getting the industry to be more health conscious perhaps that process could be speeded

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up. We need to be more proactive dealing with bakery practitioners; we need to have more seminars with them, to be able to understand their concerns, and to educate them about the importance of health and nutrition and to be able to impress on them that making healthy products need not be a burden or a cost; on the contrary, it can be a huge business opportunity. At Kamani, we keep holding seminars with bakery practitioners and others, and it is something we intend to focus on more actively in the future.

How important is R&D at Kamani Oils?

Very important. We constantly research our processes and study the chemistry of the oil molecule in a quest to understand its wonders and possibilities. This provides us an insight into beneficial processing methods. Our commitment and working closely with our valued customers, helps us to customise our products to meet their distinct requirements. We have a fully equipped application centre with facilities suiting customer requirements, be it chocolate making, baking, frying, ice cream, etc. The application team works closely with our customers to ensure that we are perfecting our products. The research team works constantly to evolve better methods of processing to continually reduce costs and improve quality.

Kamani Oils is one of the few companies in the country that manufactures trans free shortening. But this has still not caught on with the bakery industry today. Why is that so?

Well if you look at segments such as the confectionary business, say with sweets and chocolates, using trans free shortening is becoming the norm today, as is the case globally. But yes, it is true that with the bakery segment specifically, it hasn't caught on yet. But that again goes back to the fact that the segment is dominated by the unorganized sector. So if you pick up a khari biscuit, for instance, it's not properly packaged, and the low-end consumer of such products is not necessarily aware and concerned with the health benefits or lack of them in the biscuit he is consuming. But as the laws improve and packaging and labelling become essential, and consumers become more aware, we will see the use of trans free shortening go up significantly in the bakery industry. Already, labelled biscuits (the large

organized players) are becoming trans fat free, so it is definitely a trend which is on the upswing.

What is the state of the oils and fats business today and what is its future?

The oils and fats business is in a state of transformation where we're seeing a lot of consolidation going on. It's a globalized business, and all the big players internationally are already in India.

And is Kamani partnering with any of them?

No. We are growing independently because we are focused on the food industry alone. The future of the oils and fats business is bright. For all of us across segments.

Is Kamani focused on just the domestically available oils?

Not necessarily. In order to ensure a high quality finished product, we source the best raw materials not just from India but from all over the world. Domestically grown oils like coconut, groundnut and sunflower oils are sourced from a set of quality conscious suppliers with whom we have a long-standing relationship. This ensures the purity and freshness of raw oils. For oils that need to be imported, we rely on the best-known companies that have a history of quality supplies.

Rising prices has really affected the industry though, hasn't it?

Absolutely. It's the biggest challenge the industry faces today. Agri prices have been shooting up not just here but all over the world and there's been no stopping it. The government has been proactive and maintained zero duty on import of oils, and that has helped. We are seeing greater stabilization today compared to a year ago.

Where do you see Kamani Oils five or ten years from now?

I see Kamani Oils as a dominant player in the value-added foods segment of the industry not only in India but outside too. Our aim is to reach out to quality conscious customers globally. ■



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Why Oil Blends are More Healthy Than Single Oils

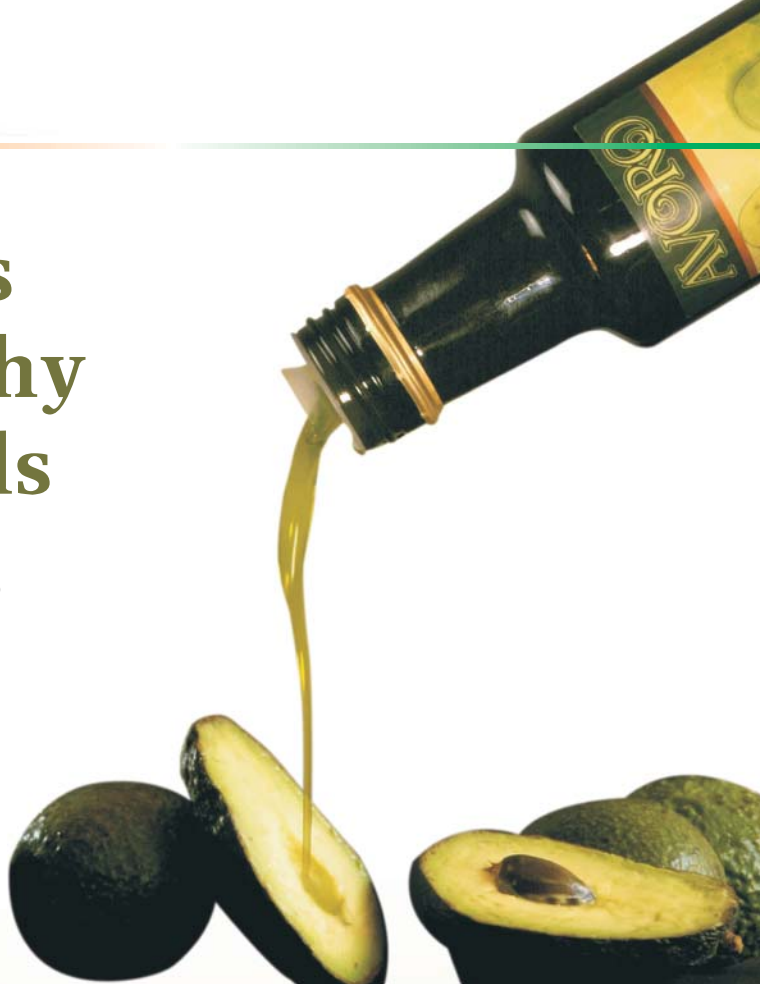
By Dr. Sudhakar Mhaskar
Executive Vice president, R&D CPB, Marico



Vegetable oils are the most essential part of nutrition as they possess the most concentrated form of energy in foods. In addition, they also help in many biologically important physiological functions,

like, absorption/mobilization of oil soluble vitamins, production of inflammatory precursors in the body, without which life can not be sustained. The fats also play a savoury role to create a palatable texture, and a distinct flavor by dissolving the oil soluble flavor components. But while oils play such an important role one also needs to exercise a certain discipline in terms of their quantity of intake and quality of composition. This coupled with new and changing lifestyles, such as stress, overeating, a sedentary life, has got this important class of food under the scanner.

The major portion of vegetable oils is triglycerides which are mixed esters of glycerine and fatty acids. These oils, in addition to triglycerides, have minor components such as phospho-glycerides, tocopherols, esters of cycloartenols, which in many a case exhibit very important biological activity. A fatty acid is a hydrocarbon chain, with methyl group at one end and a carboxylic function at the other end. The fatty acids found in the vegetable kingdom fall into two major classes. The first class depends upon unsaturation, i.e., saturated and unsaturated; and the second class is concerning the chain length



of fatty acids. These two aspects, namely, chain length and presence/absence of unsaturation play a great role in assigning many biological properties to vegetable oils in deciding the cardio vascular health of humans.

In terms of biological activity, these fatty acids fall into three classes:

- Saturated These do not contain unsaturation
- Monounsaturated (MUFA) These contain only single unsaturation
- Polyunsaturated (PUFA) These contain more than one double bond. These fall into two classes, omega-3 and omega-6.

The long drawn research of the implications of the fats in cardio vascular diseases (CVD) has indicated that

- Coronary heart disease (CHD) risk is positively linked with dietary saturates, and negatively linked with polyunsaturated fatty acid (PUFAs).
- Consumption of Omega-3 fatty acids, such as in fish, appear as highly protective against CHD
- PUFAs (linoleic acid or Omega-6) lower low



Recommended Fat	% of kcal.
Total Fat	<30
Saturated	8-10
Polyunsaturated	5-8
Monounsaturated	Difference
Ratio of Polyunsaturated to saturated Fat	1-1.5 : 1

density lipoprotein (LDL) cholesterol levels most, and saturates, especially butter fat, raise LDL levels most.

- Fish oil fatty acids (omega-3) lower triglyceride and raise high density lipoprotein (HDL) cholesterol levels.
- A higher ratio of dietary omega-3 and omega-6 fatty acids than currently consumed in our population may be desirable, and can be achieved by consumption of Linolenic acid in Soya, flaxseed oils and of DHA, EPA in Fish oils.
- Large prospective trials show that people who experience least CHD have a pattern of eating that is rich in fish, PUFAs, whole-grain cereals, fruits and vegetables and low-fat dairy foods, and low in saturates from dairy fat, meat fat and fried foods.

Based on these research output, several health associations have formulated nutritional guidelines for fats in prevention of CVDs. The National Institute of Nutrition has recently published one such guideline.

Every vegetable oil has a particular fatty acid composition which is decided by its genetic make up and, certain variation in this composition occurs due to geological, climatic and sometimes due to mutating conditions. Even within these variations, the oil shows nearly similar composition. So, Olive has high amounts of MUFA (oleic acid), Flaxseed high PUFA (linolenic Omega-3) whereas Safflower has high amounts of PUFA (linoleic, Omega-6). On account of the research generated, each of these oils will offer benefit to a certain aspect and stage of CVD. For example, Safflower is known to be a

cardioprotective oil on account of its high amounts of linolenic (Omega-6) fatty acid. The fatty acid is known to be a cardioprotective. In short, a single vegetable oil can offer a limited benefit.

The problem of multibenefits from the single oil product can be resolved if mixture of certain oils is done. Two or more of heart friendly oils can be blended to enable the multibenefits that arise out of individual oils. The resulting oil will then be able to conform to the nutritional guidelines far better than single oils. Blended oils will offer benefit on multi aspects of CVD and also can enable consumers to satisfy their preference for different oils.

Enough research has been done to show the health benefits of such blends in literature. Sugano has published a paper to show that 80:20 blend of RBO and Safflower oil can reduce the LDL to a lower level than individual oils. The blend provides the benefits of PUFA from kardi oil and, the MUFA and minor components (Oryzanols, tocopherols, Tocotrienols) of RBO to provide higher benefit. Gamma-Oryzanol has hypocholesterolemic effect, growth promotion, gonadotropic. Australian researchers have tested the effects on plasma cholesterol produced by two semihardened blends of edible oils, suitable for commercial use, both of which had saturated fatty acid contents lower than those of current products. They found favorable effect of linoleic acid against saturated fatty acids.

Currently under the Indian Regulatory framework (FDA/PFA), blends can contain a maximum of two vegetable oils and each Oil should be a minimum of 20% in a blend.

So blends of veg oils serve multibenefits

- Improved Nutritional Profile. No single oil has ideal ratio of fatty acids. Hence blending allows the flexibility of having the best of two oils.
- Improved Culinary Attributes Taste, Aroma
- Improved shelf life Frying (PUFA are oxidation prone) Fried Food Keeping Quality

Vegetable Oil blends are therefore more beneficial for use than single oils. ■

Bakery Shortening for Puffs



By Vivekananda Ojha
Consultant, Bakery Fats & Specialty Fats

In the previous issue, I had talked about the types of bakery shortenings and their uses.

Let us know more about Bakery Shortening specially designed for Puffs.

- (A) Hard Consistency
- (B) Soft Consistency
- (C) Margarine for Puffs.

We are all aware that making puffs is tedious and time consuming. There are many stages to the process:

- 1) Kneading flour to make dough of the required consistency
- 2) Cutting into loafs of required weight (cross)
- 3) Rolling in rectangular shape
- 4) Laminating the dough
- 5) Folding
- 6) Re-rolling and Folding
- 7) Cutting according to shape and size
- 8) Baking at high temperature
- 9) Baking at low temperature

For all the stages, the dough should be cold enough to sustain laminated fat in puff till it goes for baking.

To prepare dough for Puffs, bakers use different systems depending on climatic conditions. But common among all of them are:

- 1) Kneading Flour with ice, and
- 2) Kneading flour with plain water or chilled water.

1) Kneading Flour with Ice (Ice Khari)
 This process is prevalent in Mumbai and other parts of Maharashtra. The bakeries make Puffs in large scale and the job is done manually. The system is adopted by old traditional bakeries having two fire wood ovens.

Ice Khari

In this process the ice is broken into small pieces on the platform. Salt is mixed with the ice and left for some time. Then the bakers sprinkle the flour on ice cubes and continue rubbing with ice to form a hard consistency of dough. (They prepare dough according to the hardness of the Bakery Shortening or vice versa.) The dough is cut in equal part according to weight, say 3 kgs. This is commonly known as cross. The cross is rolled into a rectangular shape, laminated, folded, rerolled, and folded into pillow shapes. These pillow shapes are covered with cloth previously dipped in ice cold water. The process is done in order to moisten the dough which might have dried during rolling and the high temperature in the bakery and also to keep laminated fat intact so it does not melt down before baking.

Since making Puffs is hectic and time consuming, utmost care is taken from dough making to the final stage.

With new bakery machinery equipped with state of the art technology, such as Dough Sheater, Spiral, and Rotary Oven, now



available in the market, the job of the baker has been made easy. Old traditional bakeries are purchasing these equipment to save the cost of labor + time. New bakeries are coming up with the latest trend to produce quality products.

2) Flour Kneaded with Water (Water Khari) In this process the baker kneads the flour with room temperature or chilled water according to the prevailing climatic conditions. The dough is of medium or soft consistency. Depending upon the consistency of fat, the rolling is done manually or on a dough sheater. The process of lamination is manual. The rest of the process is the same as in Ice

Khari.

The thumb rule for bakers is that hard consistency fat should have hard consistency dough, whereas soft consistency fat should have soft consistency dough.

The logic behind the thumb rule is that if the dough

is of hard consistency and the fat is of soft consistency, the fat will ooze out after lamination while rolling the second time. Whereas soft consistency of dough with hard consistency fat will tear the dough while laminating.

Margarine for Puffs.

Margarine is substitute for Butter. Butter has 85% fats, 15% is moisture and it has very low melting point. Hence it is very difficult to make puffs from butter. The bakers have opted for margarine which is a butter substitute with 85% fats and 15% moisture, added with emulsifiers. The advantage of using margarine is that it makes puffs more crispy and light in weight.

In the next issue, we shall talk about: Better results for puffs; Common complaints and remedies.

For any queries mail me at
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vojha1953@gmail.com

हर समय उचित दाम में उपलब्ध

- ❖ एसपार्टेम
- ❖ ब्यूटीलेटेड हाईड्रॉक्सी एनीसोल (बी.एच.ए.)
- ❖ कैल्शियम प्रोपीयोनेट
- ❖ कैराजिनन गम
- ❖ साइट्रीक एसिड
- ❖ एनजाइम्स
- ❖ प्लेवरस
- ❖ फुड कलर
- ❖ ग्लाइसिरिल मोनो स्टियरेट (जी.एम.एस.)
- ❖ लेक्टिक एसिड ८० प्रतिशत ८८ प्रतिशत
- ❖ मोनो सोडीयम ग्लुटामेट
- ❖ पेक्टिन
- ❖ पोटेशियम सॉरबेट
- ❖ प्रोपिलेन ग्लाइकोल
- ❖ सोडीयम बेनझोनेट
- ❖ सोडीयम साइटरेट
- ❖ सोडीयम लेक्टेट ६० प्रतिशत
- ❖ सॉरबिक एसिड (जर्मनी)
- ❖ टरसरी ब्यूटाइल हाइड्रो क्युनोन (टी.बी.एच.क्यू.)
- ❖ विटामिन - सी (एस्कॉरबिक एसिड)
- ❖ झेनथन गम

कृपया संपर्क करें:

जय केम मार्केटींग असोशिएट्स : अलायंस

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Superior Quality of Naik Ovens

Naik Oven Manufacturing Co. is a partnership firm formed on 7th July 1999, by Prakash V. Naik & Ashish R. Sirsat on equal sharing basis. Both the partners have more than a decade long experience in the field of Rotary Rack Ovens. The Company is based out of Suchita Industrial Estate, Talwar Compound in an area of over 1600 sq. ft. Till date the Company has installed more than 100 ovens and has many satisfied clients, out of which most of them have given repeat orders. The company also has an ISO-9001-2008 Certification.

After a great deal of R&D, the Company came up with a well designed & hassle free operational Rotary Rack Oven. Demand for this oven is huge in this growing market. The Rotary Rack Ovens, being very fast in production, are sought after by many big and growing Bakeries & Hotels for quality productions. We can now state that we manufacture one of the best Ovens in India. The Ovens are also exported to Nigeria.

Some of our Clients are :

Nafees Bakery Indore; Vijaya Bakery Malvan; Kwaliti Bakers Chiplun; Kalory Ahmedabad & Surat; Alankar Bakery Miraj; Rajlaxmi Bakers



Jamnagar; J.K.Bakers Thane, Thane & Yerewada Central Jail; Bemisal Bakery Ujjain; Jahagirdar Bakers - Nashik; Milkmaid Bread Pune; Chetak Biscuits Ulhasnagar; Hydary Bakery- Ujjain; Meghraj Bakery Nashik & many more. Most of these bakeries have more than one oven. ■



Amino Acids are the Building Blocks of Proteins

Tarang Koppal, Manager Pan-India Operations,
MicroChem Laboratory



The author of this article handles national marketing for MicroChem Silliker Laboratory, one of India's most premier food testing labs. It is also one of the very few labs in the country that conducts trace level profiling and quantification of Amino Acids.



An amino acid is any molecule containing both amino and carboxylic acid functional groups. These are a class of simple organic compounds containing carbon, hydrogen, oxygen, nitrogen, and in some cases, sulphur. These compounds are called the building blocks of proteins, since they form short linear polymer chains called peptides or polypeptides which in turn form Proteins.

As a result they are critical to life, and have several important functions in metabolism.

Classification of Amino Acids

Although hundreds of naturally existing amino acids are present, about 20 standard amino acids are important to human nutrition. These can further be divided into the following categories:

Essential amino acids: these cannot be synthesized in the human body in adequate amounts and have to be obtained from external diet.

**Essential amino acids**

- Amino acids
- Lysine
- Methionine
- Phenylalanine
- Threonine
- Tryptophan
- Valine

Non-essential amino acids

- Arginine
- Alanine
- Asparagine
- Aspartic acid
- Cysteine
- Glutamine
- Glutamic acid
- Glycine
- Proline
- Serine
- Tyrosine

Semi-essential amino acids

- Histidine

Non-essential amino acids: the human body can manufacture these internally from available sources of nitrogen and a carbon skeleton.

Semi-essential amino acids: these can sometimes be manufactured internally, given the right conditions.

When taken up into the human body from the diet, these amino acids are either used to synthesize proteins and other biomolecules or are oxidized into urea and carbon dioxide as a source of energy.

Certain other amino acids, such as carnitine, are used by the body in ways other than protein-building and are often used therapeutically.

History

The first few amino acids were discovered way back in early 1800s. Two french chemists, namely Louis-Nicolas Vauquelin and Pierre Jean Robiquet made a breakthrough discovery in the year 1820, when they isolated a compound in asparagus that later proved to be asparagine. This is considered as the first amino acid to have been discovered. Another amino acid, called cystine was discovered later in 1810. Its monomer, cysteine, was however discovered much later, in the year 1884. Soon several other amino acids such as Glycine and leucine were also discovered after this period.

The Health Benefits of Amino Acids

Alanine

- It is one of the simplest of the amino acids.
- It is involved in the energy-producing breakdown of glucose.
- It is vital for the production of protein, essential for proper function of the central nervous system and helps form neurotransmitters.
- It is also necessary for the promotion of proper blood glucose levels from dietary protein.

Arginine

- It is involved in multiple areas of human physiology and metabolism.
- It plays an important role in cell division, the healing of wounds, removing ammonia from the body, immune function, and the release of hormones.
- It has a number of functions in the body such as assisting in wound healing, hormone production, immune function and removal of excess ammonia.

Asparagine

- It is one of the principal and frequently the most abundant amino acids involved in the transport of nitrogen.
- It is very active in converting one amino acid into another (amination and transamination) when the need arises.
- It serves as an amino donor in liver transamination processes.

Aspartic acid

- It plays a paramount role in metabolism during construction of other amino acids and biochemicals in the citric acid cycle.
- Among the biochemicals that are synthesized from aspartic acid are asparagine, arginine, lysine, methionine, threonine, isoleucine, and several nucleotides.

Carnitine

- It is a nutrient responsible for the transport of long-chain fatty acids into the energy-producing centers of the cells (known as the mitochondria).
- It is recommended as a daily supplement to help maintain blood lipid profile and promote fatty acid utilization within heart muscle.

Cysteine

- It is one of the key components in all living things.
- N-acetyl cysteine (which contains cysteine) is the most frequently used form of cysteine.
- N-acetyl-L-cysteine (NAC) helps break down mucus and detoxify harmful substances in the body.
- Both cysteine and NAC have been shown to increase levels of the antioxidant glutathione.

Glutamine

- It is the most abundant amino acid in the body.
- It is involved in more metabolic processes than any other amino acid.
- Glutamine is converted to glucose when more glucose is required by the body as an energy source.
- It assists in maintaining the proper acid/alkaline balance in the body, and is the basis of the building blocks for the synthesis of RNA and DNA.

Glutamic acid

- It is biosynthesized from a number of amino acids including ornithine and arginine.
- When aminated, glutamic acid forms the important amino acid glutamine.

Glycine

- It is essential for the synthesis of nucleic acids, bile acids, proteins, peptides, purines, adenosine triphosphate (ATP), porphyrins, hemoglobin, glutathione, creatine, bile salts, one-carbon fragments, glucose, glycogen, and L-serine and other amino acids.

Histidine

- It is needed to help grow and repair body tissues, and to maintain the myelin sheaths that protect nerve cells.
- It also helps manufacture red and white blood cells, and helps to protect the body from heavy metal toxicity.
- It stimulates the secretion of the digestive enzyme gastrin.

Lysine

- It is an essential building block for all protein, and is needed for proper growth and bone development in children.
- It helps the body absorb and conserve calcium and it plays an important role in the formation of collagen.

Methionine

- It supplies sulfur and other compounds required by the body for normal metabolism and growth.

Phenylalanine

- It is a part of the composition of aspartame, a common sweetener found in prepared foods (particularly soft drinks, and gum).
- It plays a key role in the biosynthesis of other amino acids and some neurotransmitters.

Proline

- It is involved in the production of collagen and in wound healing.
- It is an important component in certain medical wound dressings that use collagen fragments to stimulate wound healing.

Serine

- It has sugar-producing qualities, and is very reactive in the body.
- It is highly concentrated in all cell membranes, aiding in the production of immunoglobulins and antibodies.

Threonine

- It is an important component in the formation of protein, collagen, elastin and tooth enamel.
- It is also important for production of neurotransmitters and health of the nervous system.

Tryptophan

- It may enhance relaxation and sleep, relieves minor premenstrual symptoms, soothes nerves and anxiety, and reduces carbohydrate cravings.

Tyrosine



- L-tyrosine, through its effect on neurotransmitters, is used to treat conditions including mood enhancement, appetite suppression, and growth hormone (HGH) stimulation.

Valine

- It is a branched-chain amino acid (BCAA), and has been found useful in treatments involving muscle, mental, and emotional upsets, and for insomnia and nervousness.
- It may help treat malnutrition associated with drug addiction.

Industrial Applications

Considering their central role in biochemistry and nutrition, amino acids are commonly used in food technology and industry. Monosodium Glutamate, a common flavor enhancer is a prime example of the same.

Besides food, they are also used in other industries where applications could include various new areas and technologies including production of biodegradable plastics, drugs and chiral catalysts.

Laboratory Testing

Even as our understanding of these amino acids increases and their industrial applications achieve far reaching results with the help of newer technology, trace level detection and identification of individual amino acids becomes extremely important.

Excellence in laboratory testing is now the need of the day, and certain specialized food testing labs carry out amino acid profiling with accurate identification and quantification. However to conduct such trace level detections requires at a minimum-state-of-the-art instrumentation, technically competent personnel, certified reference materials and validated test methods.

Such laboratories that perform these trace analysis, though far and few, are one of the key quality partners to the Industry and can assist in taking this technology even further. ■

Surfactants in Food Could Speed Lipid Digestion

By Nathan Gray

The use of surfactants in food could be causing quicker break down of protein-coated lipids, according to a new study with potential to aid future food design.

The research, published in the journal *Soft Matter*, models protein coated lipids in foods, finding that protein coats are destabilized by interactions with surfactants leading to a quicker break down of lipids in food. The findings offer a new focus in finding ways to control lipid digestion that may lead to the formulation of satiety inducing foods.

"Much of the fat in processed foods is eaten in the form of emulsions such as soups, yoghurt, ice cream and mayonnaise," said Dr Peter Wilde from the Institute of Food Research. "We are unpicking the mechanisms of digestion used to break them down so we can design fats in a rational way that are digested more slowly."

Improved understanding

The design of healthier foods to control fat uptake in the diet is an emerging area of research. Proteins are commonly used as emulsifiers in the food industry, as they provide stabilization and can add nutritional value to products. Beta-lactoglobulin is a whey protein commonly used emulsifier in industry, due to its highly valued functional properties, but very little is understood about the influence of such food structures on the digestion of lipids. Researchers believe that such systems are important models for testing the effects of digestive conditions on the break down of fats in food.

How emulsions behave under different digestive conditions, is an area of increasing interest as knowledge of how foods are digested could be used to create novel functional products.

Enhanced breakdown

The new study investigated the relationships between protein stabilizing layers and lipid

digestion looking specifically at the effects of the digestive enzyme pepsin on beta-lactoglobulin surface coated lipids. The research observed that pepsin partially breaks down the normally assumed stable surface adsorbed beta-lactoglobulin molecules under gastric conditions.

The addition of surfactant, revealed a modification of the proteins, with researchers finding an "unexpected synergism" that leads to enhanced break down of the surface proteins. Surfactants help to break down the protein layer even more effectively, improving access for the enzymes and bile salts that break down fat.

"An unexpected synergism has been revealed between surfactants and pepsin action which can lead to enhanced rupture and collapse of the protein network. These results clearly indicate that the conformation of the protein at the interface is the main determinant of hydrolysis".

The research suggests that protein coated lipids may be more resilient to stomach conditions than previously thought, though the addition of surfactants can reduce resilience.

Next steps

The study's observations could lead future research on the stabilization of protein coated lipids, allowing the design of food structures and manipulation of properties such as fat digestion. "We are now experimenting with heat and enzyme treatments to reduce the synergistic effect and make the protein barrier stronger," said Dr. Wilde.

The researchers claim that if the break down of food lipids can be delayed until fats are in the ileum, their presence could stimulate satiety-inducing hormones. *"Strategies designed to strengthen the mechanical properties of the [protein coat] networks may aid transit through the stomach"* wrote the researchers. ■

The Importance of Lipids in Our Lives

Lipids are biomolecules which are soluble in organic non-polar solvents. Consequently, fats and lipids are insoluble in water. Lipids, along with proteins and carbohydrates, are vital components of living cells. Compounds considered lipids include fats, oils, fatty acids, triglycerides and steroids-- including cholesterol.

Lipids perform many important roles. They are the highly concentrated fuel reserves that reside mostly in our adipose tissues. Lipids in Health and Disease (lipidworld.com) is an open access, peer-reviewed, online journal that publishes articles on all aspects of lipids: their biochemistry, pharmacology, toxicology, role in health and disease, and the synthesis of new lipid compounds.

Lipids in Health and Disease is aimed at all scientists, health professionals and physicians interested in the area of lipids. Lipids can undergo lateral diffusion at a rate of about 2 m m/s. This implies that the lipids can transit the surface of a bacteria in 1 sec.

Lipids are also known as fats, but they include compounds of many different kinds. Chemically, these compounds are built on a backbone of glycerol, which was a three-carbon chain.

Cellulose makes up the cell wall of plants whereas chitin provides structure to fungi and the exoskeleton of arthropods. Cells from the innate immune system, so-called dendritic cells, respond to these lipids. During this response these cells can initiate the development of so-called regulatory T-cells.

Fats come in liquid or solid form. All fats are combinations of saturated and unsaturated fatty acids. Fats and oils contain twice as much stored energy, per unit of weight, as carbohydrates or proteins.

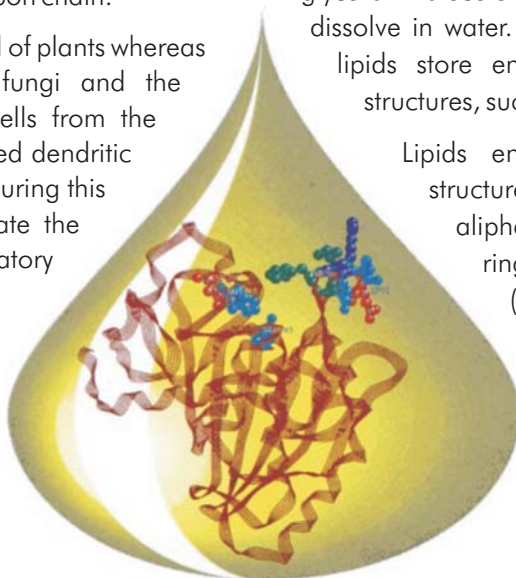
Plant foods such as nuts, whole grains. Nuts, avocados, olive oil, and canola oil are rich in monounsaturated fat. Plant phenolic compounds arise biogenetically from two main pathways - shikimic acid pathway, as hydroxycinnamic acids and coumarins, and the polyketide (acetate) pathway. Some other phenolics can be produced by combination of these two pathways.

Lipids have a number of specialized functions. In mammals living in cold climates, subcutaneous fat retards loss of body heat. Lipids are the important components of biomembranes. They are classified into storage lipids and membrane lipids. Lipids include a variety of molecular types, such as neutral fats, oils, steroids, and waxes. Unlike other classes of biomolecules, lipids do not form large polymers.

Lipids of group B are linked to nucleotide diphosphate coupled alcohol. They represent the largest group of lipids in mitochondria and cytoplasmic membranes. Lipids are categorized into two broad classes.

The first, simple lipids, upon hydrolysis, yield -- at most -- two types of primary products, i.e., a glycerol molecule and fatty acid(s). Lipids do not dissolve in water. In animals, including humans, lipids store energy and form parts of cell structures, such as cell membranes.

Lipids encompass a huge range of structures, which can be aromatic or aliphatic (with or without a benzene ring), acyclic (open-chain) or cyclic (ringed), straight or branched, saturated or unsaturated, flexible or rigid. This diversity makes it impossible to define lipids on the basis of a single core structural feature or biosynthetic origin. ■



Gene Linked to High Cholesterol in Blood Found

Scientists have identified a gene that causes high levels of bad cholesterol to accumulate in the blood as a result of a high-cholesterol diet.

Researchers at the Southwest Foundation for Biomedical Research (SFBR) in San Antonio, USA studied a strain of laboratory possums developed at SFBR that has normal blood levels of "bad" low-density lipoprotein (LDL) cholesterol when fed a standard low-cholesterol diet, but extremely elevated levels of LDL cholesterol when fed a high-cholesterol diet.

These high-responding opossums are used to identify the genes and the underlying mechanisms

that control response to dietary cholesterol.

"This research will improve our understanding of cholesterol metabolism and may shed light on why some people have high levels of bad cholesterol in blood while others do not when they consume cholesterol-enriched diets," said John L. VandeBerg, Ph.D., SFBR's chief scientific officer and senior author on the paper.

The study involved analyzing various lipids, or fats, in blood and bile to find differences in cholesterol metabolites, sequencing candidate genes of interest to find mutations, and determining the impact of each mutation by genetic analyses. ■

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TAKE

Ingredients Business decided to pose five key questions regarding infrastructure, production and investment to the major bakeries in the city of Mumbai. Here are their responses.

1 Choice Bakery

Contact Person: Ahmed Khan
Contact Number: 9022830155

- Q1) How much wheat, flour and other flavours do you use on a daily basis?
(A) 50 Kgs per Day
- Q2) Do you use sugar or sugar substitute?
(A) We use sugar powder.
- Q3) Are you using the latest technology and equipment?
(A) We use the latest electronic machines that save on time.
- Q4) Are you using coal-fired, wood-fired or electric ovens?
(A) We use modern electronic ovens.
- Q5) How much do you regularly invest in upgrading present facilities of
(A) a) Production: No comments.
b) Storage: No comments.
c) Distribution: 70% of our products go to Marol Pipeline Bakery, and the remaining 30% to Marol Military Road Bakery.
d) Customer Feedback: Feedback comes mainly from our regular customers based on which we make changes.



2 Sandra Bakery

Contact person: Ms. Sandra
Contact Number: 9833686204

Sandra Bakery have been distributors in the bakery business, but are now looking to start their own manufacturing set-up.

- Q1) How much wheat, flour and other flavours do you use on a daily basis?
(A) We are a new set-up and are yet to decide on how much flour and other flavours to use in the right quantity. We are open to suggestions.
- Q2) Do you use sugar or sugar substitute?
(A) Again, we are open to suggestions.
- Q3) Are you using the latest technology and equipment?
(A) We have ambitious plans and want to use only the latest technology and equipment. We are looking for the best rates on the latest modern equipment & good after sales service.
- Q4) Are you using coal-fired, wood-fired or electric ovens?
(A) We want to use electronic ovens and are looking for the most modern equipment.
- Q5) How much do you regularly invest in upgrading present facilities of
(A) a) Production
b) Storage
c) Distribution
d) Customer Feedback

As on now, we are dealers/distributors but once we start our own production we are aiming to get church orders, especially on Sundays.

3 Marol Bakery

Contact person: Guddu Bhai
Contact Number: 022-29259242

- Q1) How much wheat, flour and other flavours do you use on a daily basis?
(A) 30 kilograms.
- Q2) Do you use sugar or sugar substitute?
(A) We use regular sugar.
- Q3) Are you using the latest technology and equipment?
(A) We are using our old machinery and equipment.
- Q4) Are you using coal-fired, wood-fired or electric ovens?
(A) We use wood fired ovens.
- Q5) How much do you regularly invest in upgrading present facilities of
(A) a) Production: No comments.
b) Storage: No comments.
c) Distribution: No comments.
d) Customer Feedback: No comments.

4 Swad Food Products

Contact Person: Fauzindi
Contact: 9821311103

- Q1) How much wheat, flour and other flavours do you use on a daily basis?
(A) 1,000 kilograms.
- Q2) Do you use sugar or sugar substitute?
(A) We use only high quality sugar.
- Q3) Are you using the latest technology and equipment?
(A) We are using a mix of both older and the latest machinery and are open to change further where it benefits us.
- Q4) Are you using coal-fired, wood-fired or electric ovens?
(A) We use wood-fired ovens.
- Q5) How much do you regularly invest in upgrading present facilities of
(A) a) Production: No comments.
b) Storage: No comments.
c) Distribution: No comments.
d) Customer Feedback: Based on regular customers.



5 Sheetal Bakery

Contact Person: Manjoor Bhai
Contact Number: 9920012174

- Q1) How much wheat, flour and other flavours do you use on a daily basis?
(A) 200 kilograms.
- Q2) Do you use sugar or sugar substitute?
(A) We use "S" Sugar in our products.
- Q3) Are you using the latest technology and equipment?
(A) We use diesel ovens as they save 30 % more time then wood ovens.
- Q4) Are you using coal-fired, wood-fired or electric ovens?
(A) Diesel ovens as they save time & increase productivity.
- Q5) How much do you regularly invest in upgrading present facilities of
(A) a) Production: As a total, including production, it is Rs. 9,000 daily.
b) Storage: Our products get over in a day hence storage cost doesn't arise.
c) Distribution: No comments
d) Customer Feedback: Our feedback comes from our regular customers.

6 Faizadam Bakery

Contact Person: Masood Ul Hasan
Contact Number: 9867828149

- Q1) How much wheat, flour and other flavours do you use on a daily basis?
(A) We have a consumption of 500-550 kilograms per day.
- Q2) Do you use sugar or sugar substitute?
(A) We use regular sugar.
- Q3) Are you using the latest technology and equipment?
(A) We are using the latest Floor Mixing equipment.
- Q4) Are you using coal-fired, wood-fired or electric ovens?
(A) We are using wood-fired ovens.
- Q5) How much do you regularly invest in upgrading present facilities of
(A) a) Production: As a total. Including production, it is Rs. 10,000 daily.
b) Storage: No comments. But we sell our old products as scrap for Rs. 4 per kg.
c) Distribution: It fluctuates so we can't specify.
d) Customer Feedback: As we manufacture only pao, we get feedback from our regular customers.

7 Bharat Bakery

Contact Person: Guddu
Contact Number: 9967786766

- Q1) How much wheat, flour and other flavours do you use on a daily basis?
(A) 200 kgs at least.
- Q2) Do you use sugar or sugar substitute?
(A) We use sugar. The brand we use is "PC" Sugar.
- Q3) Are you using the latest technology and equipment?
(A) We use all the latest machinery and ovens. The latest equipment we have invested in is a high speed mixer.
- Q4) Are you using coal-fired, wood-fired or electric ovens?
(A) We are using the latest technology in electronic ovens.
- Q5) How much do you regularly invest in upgrading present facilities of
(A) a) Production: Rs. 20,000 per day
b) Storage: Rs. 30,000 per day
c) Distribution: We distribute 500 Kgs at Rs. 50 which is a total of Rs.25,000 per day
d) Customer Feedback: Through various walk in's and brokers.

Also to summarize in total you can say we have daily expenses of Rs. 75,000 on average.

8 Mohamadi Bakery

Contact Person: Imtiaz Bhai
Contact Number: 9322317675

- Q1) How much wheat, flour and other flavours do you use on a daily basis?
(A) 100 kgs.
- Q2) Do you use sugar or sugar substitute?
(A) We only use sugar (icing sugar).
- Q3) Are you using the latest technology and equipment?
(A) We use modern aata mixer machine.
- Q4) Are you using coal-fired, wood-fired or electric ovens?
(A) We use diesel ovens.
- Q5) How much do you regularly invest in upgrading present facilities of
(A) a) Production: Rs.5,000 Per day
b) Storage: Rs.25,000 Rs Per day
c) Distribution: Can't specify.
d) Customer Feedback: It is based on walk in responses.



9 New Star Bakery

Contact Person: Shabir Bhai
Contact Number: 9892979984

- Q1) How much wheat, flour and other flavours do you use on a daily basis?
(A) We use 630 kilograms.
- Q2) Do you use sugar or sugar substitute?
(A) We use regular packed sugar.
- Q3) Are you using the latest technology and equipment?
(A) We use modern aata mixers.
- Q4) Are you using coal-fired, wood-fired or electric ovens?
(A) We use wood-fired ovens and are quite happy with them.
- Q5) How much do you regularly invest in upgrading present facilities of
(A) a) Production: At least Rs. 13,000 per day.
b) Storage: Made on order basis hence no chance on storage.
c) Distribution: Minimum seven boris a day.
d) Customer Feedback: We depend on our regular customers for feedback.





न्यूट्रास्यूटिकल्स : बेकरी पदार्थ अब और आरोग्य वर्धक

बेकरी पदार्थ जो मौलिक पोषण के परे हैं, नूतन बदलाव हैं। आईए बेकरी विज्ञान में नई विचारधारा न्यूट्रास्यूटिकल्स शायद सुनने में जटील लगे परंतु ये केवल ऐसे पदार्थ हैं जिनसे बेकरी पदार्थों को अधिक पौष्टिक बना जाता है। ये फल या सुखे मेवे हो सकते हैं या ओमेगा थ्री एस जैसे तत्व हो सकते हैं। ये तत्व धिरेधिरे खाद्य पदार्थों में अधिकाधिक उपयोग में लाए जा रहे हैं। बेकरी पदार्थों के निर्माताओं ने इस क्षेत्र में नए सिरे से उन्नति शुरू है।

टोड रून्स्टेड का कहना है कि न्यूट्रास्यूटिकल्स वो तत्व हैं जो भोजन को आम जीवन शैली का हिस्सा बनाते हैं वे **Functional Foods and Nutraceuticals Magazine** का संपादक हैं। वे ये भी कहते हैं कि दैनंदिन भोजन मौलिक पौष्टिक तत्वोंसे बढ़कर है।

हाल ही में यह विवाद उभरकर आया कि बेकरी पदार्थों के निर्माता अपने पदार्थों में अधिकाधिक बदलाव लाने का प्रयास कर रहे हैं। खास तौर पर जब कुछ कंपनियों ने आरोग्यवर्धक व्यंजन बनाना शुरू किया, कुछ लोगों का मानना है, कि बेकरी पदार्थों में किसी इजाफे की आवश्यकता नहीं है। यहाँ तक की जिन पदार्थों को आरोग्य के लिए बेहतर माना गया है, वे भी सभी के लिए नहीं है। चूंकी, बहु चर्चित ट्रांस फॅट को जब विश्वभर में बहिष्कृत किया जा चुका है, कंपनियों को चाहिये कि अपने खाद्य उत्पादों को नए सिरे से बेहतर बनाए और इस नए खाद्य बाजार का अधिकाधिक लाभ उठाए।

बेकरी निर्माता बेकरी पदार्थों के व्यापारी और खाद्य वैज्ञानिकों से बातचीत के बाद उन पदार्थों की सूची तैयार की गई जिनसे बेकरी उद्योग पर असर पड़ेगा। यह सूची कभी भी परिपूर्ण नहीं कहलाएगी पर यह केवल नए न्यूट्रास्यूटिकल्स को ढूँढने को एक प्रयास है।



तैल पदार्थों पर संधान

गौरतलब है कि खाद्य पदार्थों में से ट्रांस फॅटी एसिड निकालने के लिए नए से नए तरीके अपनाए जा रहे हैं। पर केवल ट्रांस फॅट हटा लेने से या कम कर देने मात्र से पदार्थों को फक्शनल फूड नहीं कहा जा सकता। ट्रांस फॅट मुद्दे से बेकरी पदार्थों में कई नए आयाम उभर कर आए हैं। ट्रांस फॅट के कार्य प्रणाली पर अध्ययन से बेकिंग विधी के लिए उपयोग में लाए जाने वाले पदार्थों में वृद्धि हुई है और फायबर जैसे पदार्थों में तबदीलिया की गई है जिनसे तैल पदार्थों के अभाव के बावजूद उनकी विशेषताएँ बनी रहती हैं।

कुछ तेलों को तो उनकी आरोग्य वर्धकता के बलबूते पर बेचा जा रहा है और उपभोक्ताओं को अच्छे और बुरे फॅट्स तैल पदार्थों के बारे में प्रशिक्षण भी दिया जा रहा है। उदाहरण के तौर पर 'नेचरर्स पाथ फूड्स' नामक कंपनी अपनी नई ऑर्गेनिक टोस्टर पेस्ट्रीस में विशेष तेल का इस्तेमाल करती हैं। "इस



कंपनी में हम, ऑर्गेनिक खजूर के तेल का इस्तेमाल करते हैं जिनमें एंटी-ऑक्सिडेंट के गुण हैं व जो सॅच्युरेटेड /अन-सॅच्युरेटेड फैट्स में प्राकृतिक संतुलन प्रदान करते हैं।”

कुछ बेकरी पदार्थ विशिष्ट तौर पर रोगियों के लिए, उनकी जरूरत के अनुसार, तैयार किए जाते हैं। नीव जर्सी स्थित **RD Foods (Right Direction Foods)** कोलेस्ट्रॉल कम करने के लिए कूकीज का निर्माण करते हैं। **RD foods** के अध्यक्ष सुश्री वेंडी मिलर कहते हैं धुलनेवाले **Fiber** और पेडों के स्टेरॉल्स (**Sterols**) इन **Cookies** में इस्तेमाल किए जाने वाले विशेष न्यूट्रास्यूटिकल्स हैं।

नीव जर्सी के फार्माकेम लेबोरेटरीस ऐसे ही संशोधन में कार्यरत हैं ताकी अधिकाधिक कार्यगिल खाद्य पदार्थ बेकरी उद्योग में लाये जा सकें। कंपनी के ग्रेगरी डीव कहते हैं “हम ऐसे पदार्थों को बेहतर बना रहे हैं, जिनसे मोटापे पर नियंत्रण किया जा सके, जो उर्जावर्धक, आरामदायक हो और यहाँ तक हड्डियों के स्वास्थ्य के लिए उत्तम होंगे। इनमें मोटापे को कम करने वाले न्यूट्रास्यूटिकल्स सबसे बड़ी तादाद में तैयार किए जाते हैं। पर वे अभी खाद्य उद्योग में बस उभर रहे हैं।

स्टार्चलाईट फार्माकेम की तैयार किए हुए चीजों में से एक हैं। इसे सफेद लोबिया के रस से तैयार किया जाता है। पहले पहले इनका इस्तेमाल पूरक आहार के रूप में किया जाता था पर अब उन्हे पीड़झा, टॉरटियास, एवं पास्ता में भी सुरक्षित रूप से इसके नैसर्गिक तत्वों से उपभोक्ताओं को अपने मोटापे पर नियंत्रण करने में, स्टार्च के पाचन में और अपने ग्लायसिमिक इंडेक्स को कम करने में मदद मिलती है।” जब हम कार्बोहाईड्रेट्स खाते हैं, हमारे शरीर के पाचक द्रव्य अल्फा अमाइलेस स्टार्च को चीनी एवं फ्रुट में परावर्तित करते हैं। स्टार्च लाईट इन पाचक द्रव्यों से जुड़ जाता है, जिससे स्टार्च अधिकतर भारीर में बिना धुले निकल जाता है।

उद्देश्य की परिभाषा

नीव यॉर्क स्थित वायटलिशियस बेकिंग कंपनी का सबसे मूल उद्देश्य है, आरोग्य वर्धक बेकरी उत्पादों जैसे मफिन्स, मफिन टॉप, वीटा केक इत्यादी में महारथ हासिल करना। कंपनी के अध्यक्ष **Aryeh Hecht** ने 1999 में इसकी स्थापना की क्योंकि जब वे फिलडेफिया से नीव यॉर्क की यात्रा कर रहे थे, उन्हे कोई भी आरोग्य वर्धक, बेकरी उत्पाद खाने को नहीं मिल पाया। **Aryeh Hecht** कहते हैं “मुझे कुछ ऐसा चाहिए था जिससे मैं अपने मोटापे पर नियंत्रण रख सक, खाना पौष्टिक भी हो और नैसर्गिक भी। खाने का जायका भी मजेदार हो जो कि रूची बनाए रखे।

आज जो खाद्य पदार्थ वायटलिशियस कंपनी बना रही है, उनके पीछे **Aryeh Hecht** की यही सभी आकांक्षाएँ हैं। वायटलिशियस के प्रमुख उत्पाद, गेहूं से बने हैं और फायबर, विटामिन और खनिज पदार्थों से भरपूर हैं। कुछ खाद्य पदार्थों में विशेष तत्व भी मिलाए जाते हैं जैसे डार्क चॉकोलेट्स, सूख मेवा या अनार। विशेष रूप से गहरे रंगों के फल जैसे अनार, ब्लूबेरीस इत्यादि चॉकोलेट, अनाज एवं बेकरी उत्पादों में मिलाए जाते हैं ताकि उनके एंटी ऑक्सिडेंट गुणों का लाभ उठाया जा सके। चेरी पोमग्रेन नेचर्स पाथकंपनी की नवीनतम जायके कली पेस्ट्री है, जिनमे ब्लूबेरी, स्ट्रॉबेरी चॉकोलेट और ब्राऊस शुगर मॅपल सिनॅसन (दालचीनी, भी शामिल है)

उपभोक्ताओं से फायबर एवं साबुत अनाज को अच्छा प्रोत्साहित मिल रहा है। वास्तव में **82%** अमरीकी स्वास्थ्य बरकरार रखने में काफी मदद मिलती है। सन ऑप्टा इन्ग्रीडियंट्स ग्रुप के सीनियर मैनेजर श्री राजन मेहता कहते हैं कि नोव्हेंबर २००६ में उपभोक्ताओं में फायबर तीसरे सबसे माना हुआ नुस्खा है। इसके आगे केवल ज्यादा पानी पीना और ताजा खाना खाना बेहतर नुस्खे हैं। मेहता कहते हैं “खाने को पौष्टिक बनाना तो आसान है पर उसका जायका रूप, रंग इत्यादि बरकरार रखना सबसे मुश्किल है।



प्रून प्यूरी का केक में तैल तत्त्व की जगह उपयोग

प्रून प्यूरी करीब ३०% वजन तक किसी भी केक में तैल युक्त पदार्थों की जगह ले सकता है । इसका उपयोग बेक किये हुए पदार्थों में से सूच्यूरटेड फॅट को हटाने के लिए किया जा सकता है, ऐसा अमरीका के भास्त्रज्ञ मानते हैं ।

नीव यॉर्क के हंटर कॉलेज के कुछ वैज्ञानिक अपने इस भोध को पोस्टर के जरिये, ADA FOOD & NUTRITION CONFERENCE AND EXPO में नवंबर महिने में बॉस्टन शहर में प्रस्तुत करेंगे।

बहुत से तत्व फॅट रिप्लेसरस के रूप में उभर कर आए हैं । ये तत्व सामान्यतः कार्बोहाइड्रेट्स लिपिड और प्रोटीन पर आधारित समूहों में विभाजित किये जाते हैं । परंतु हमेशा से यह समस्या रही है कि ऐसे तत्वों की खोज की जाए जिनसे न्यूनतम कैलरीज युक्त पदार्थ तैयार किये जा सकें और उनके उपयोग से पदार्थों के रंग, रूप, खुशबू एवं जायके में कोई विशेष बदलाव ना आए ।

रूप में पहले भी फॅट रिप्लेसरस की तरह उपयोग में लाया गया है । विशेषज्ञों के प्रून को प्यूरी स्वरूप में १५, ३० एवं ६० प्रतिशत तक इस्तेमाल कर, चॉकलेट कपकेक बनाने का प्रयास किया और उसके रंग, रूप, खुशबू एवं जायके का अध्ययन किया । इससे पहले इसी संस्था के विशेषज्ञों ने अवॅकॅडो प्यूरी का उस्तेमाल ओटमील कूकीज बनाने के लिए किया था । इसमें १०० प्रतिशत मक्खन की जगह ५० प्रतिशत अवॅकॅडो प्यूरी मिलाई गई ।

प्रून प्यूरी के इस्तेमाल से ज्यादा सख्त बन गया, क्योंकि उसमें फॅट कम कर दिया गया था । वह अधिक घना था एव्र उसमें पानी भी अधिक पाया गया । किंतु ३०% प्रतिशत प्रून प्यूरी के इस्तेमाल से बना

केक रूप एवं खुशबू में समाधानकारक था । उनके अनुसार प्रून प्यूरी का इस्तेमाल चॉकलेट केक में किया जा सकता है जिससे २४ प्रतिशत कुल फॅट, २६ प्रतिशत सॅच्यूरटेड फॅट एवं ४.३६ प्रति १०० कैलरीज कम होंगी ।

इसके अलावा भाप से पकाया हुआ बक व्हीट आटा बेकरी पदार्थों में मिलाया जा सकता है, इससे पदार्थों के रूप, रंग, एवं आकार पर कोई परिणाम नहीं होगा ।

Journal of Science of Food & Agricultural नामक पुस्तिका में छपे लेख के अनुसार, २०% बकव्हीट आटे के इस्तेमाल से बिना किसी नुकसान के वैसे ही केक का निर्माण किया जा सकता है ।





विद्यार्थी की जायकेदार खोज ने जीता इनाम



इन गर्मियों में रिकी लॅम को ओटावा आमंत्रित किया गया ताकि वे जानेमाने बावर्चियों से भेट कर सकें। उन्हें गवर्नर जनरल मायकल जीन द्वारा अपनी अनोखी खोज एवं खाद्य पदार्थों के बारे में अपने अनूठे योगदान के लिए सम्मानित किया गया।

रिकी लॅम का जन्म हॉग कॉग में हुआ। उनकी खाने की रुची और विज्ञान के प्रति निष्ठा कॅनडा में सामने आई जब वे वहा पढ़ाई पूरी कर रहे थे। जैसे-जैसे वह खाद्या पदार्थों की जटिलता समझते गए, उनका अपना खानपान का नज़रिया बदलता गया।

वो कहते हैं, “अब मुझे खाद्य पदार्थों का लेबल भी पढ़ने में भी मज़ा आता है”। “खाना कैसे बनता है यह जानने से मुझे पता चला कि खाना केवल पौष्टिकता ना होकर और भी बहुत कुछ है”।

पच्चीस वर्षीय लॅम, अनूठे संधान में लगे हैं जिससे खाद्य पदार्थों में मौजूद हानिकारक तैल पदार्थ जैसे मार्गिन, चॉकलेट या मक्खन की जगह ले सकें। लॅम के सुपखायसर मायकल रॉजरस कहते हैं। “खाद्या व्यवसाय के हाथ अभी बंधे हैं”। “फिलहाल ट्रांस एवं सॅच्युरेटेड तैल पदार्थों की जगह इस्तेमाल करने लायक हमारे पास कुछ नहीं है”।

औसतन चालीस से साठ साल की उम्र के व्यक्तियों में हर तीसरा व्यक्ति हृदय रोग या ऐसे रोगों का शिकार है जो चीनी या बुरे तैल पदार्थों की वजह से उभरते हैं। “रिकी के अध्ययन के आधार पर अब हम ऐसे तत्वों की खोज शुरू कर सकते हैं, जो क्रॅकर्स, आलू के चिप्स या मफिन्स बनाने के लिए उपयोग में ला सकते हैं और अच्छे खाने को लोगों तक पहुंचा सकते हैं।” रॉजर कहते हैं।

ट्रांस फॅट जिन्हे हम भोजन में से हटाने का प्रयास कर रहे हैं, वास्तव में भोजन के रंग, रूप को बेहतर बनाने और खाने को खराब होने से बचाने का कार्य करते हैं। परंतु उससे भी अधिक महत्वपूर्ण बात ये है कि वो खाने के हज़ायके में वृद्धि करते हैं। लॅम कहते हैं “तैल

पदार्थों का रंग रूप खाने के जायके को बढ़ाने के लिए बेहद ज़रूरी हैं। चॉकलेट खाने में और मक्खन खाने में काफी फर्क है। जबकी दोनो तैल पदार्थ हैं। जहाँ चॉकलेट मूँह में आसानी से घूल जाता है वहीं मक्खन के साथ ऐसा नहीं हो पाता।

लॅम कॅनेडियन लाइट सोर्स सीनक्रोटॉन का इस्तेमाल करते हैं यह देखने के लिए कि तैल पदार्थों का रूपांतर कणों में किस प्रकार होता है। वो कहते हैं “एक बार पता चल जाए के तैल पदार्थों का संघटन किस प्रकार हुआ है हम अपने तरह से विशिष्ट खाद्य पदार्थों के लिए उनका पुनःनिर्माण कर सकते हैं ताकि जायके का कोई नुकसान ना हो।

लॅम संशोधन करते हैं के किस तरह तैल पदार्थ अलग अलग दर पर ठंडे होते हैं, उनका कणों में रूपांतर होना और विशिष्ट तापमान पर जमना वो तैल पदार्थों के संघटन का अध्ययन करते हैं जिनकी वजह से ये पदार्थ हमारे मूँह में आसानी से घुल जाते हैं। रॉजर कहते हैं “हम ये नहीं बता सकते के कुछ तैल पदार्थ का रूपांतर कणों में किस प्रकार होता है। इसलिए हम ये ता नहीं लगा पाए हैं के ट्रांस और सॅच्युरेटेड कॅट्स कि नकल कैसे कि जाए। अगर हम ऐसा कोई तत्व ढूँड भी लेने हैं तो वह आकस्मिक होगा। इसलिए लॅम जिनकी खोज नॅच्यूरल सासन्स और इंजिनियरींग काऊनसिल ग्रान्ट पर अधारीत है लौट कर मूल विषय पर जाने को इच्छुक है ताकी तैल पदार्थों का आण्विक स्तर पर अध्ययन कर सकें। ते पदार्थ किस प्रकार हमारे शरीर में शोथित होंगे ये उनके संघटन पर निर्भर करता है इसलिए लॅम के कार्य का खाद्य जगत, सौंदर्य जगत एवं दवाईयों कि खेज में महत्वपूर्ण योगदान रहेगा। उन्हें आशा है कि वे जल्द ही पी. एच.डी. कर सकेंगे और अमरिका में पढ़ा सकेंगे ठिक उसी तरह से जिस तरह उनके शिषकों और प्राध्यापकों के पास विद्यार्थियोंके मूँह में पानी लानेकि क्षमता थी।



न्यूट्रास्यूटिकल्स: आम धारणाओं से बढ़कर

हम में से जो लोग अपने भोजन में स्वास्थ्यवर्धक खाद्य पदार्थों को शामिल करना चाहते हैं, उनके पास चुनाव के लिए एक बड़ा खजाना है। लेकिन जब हम वास्तव में उन पदार्थों तक पहुंचते हैं, कुछ एक को छोड़कर हमें अधिकतर पेय पदार्थ, चॉकलेट्स (बारस) बेक किये हुए पदार्थ एवं नाश्ते के खाने पर निर्भर रहना पड़ता है। हमें और ऐसे मौक तलाशने होंगे जिनमें परिवर्तन से स्वास्थ्यवर्धक भोजन को खाद्य श्रृंखला में लाया जा सके।

न्यूट्रास्यूटिकल्स को जिस आतुरता से अपनाया गया उसी के साथ लोगों में पौष्टिक तत्वों के बारे में जानकारी बढ़ी है। कुछ ही सालों में निर्माताओं द्वारा उपभोक्ताओं को भोजन में मौजूद तत्वों से परिचय कराने की क्षमता में कमाल की वृद्धि हुई है। चाहे वह ओमेगा-३ फॅटी ACID के हृदय पर प्रभाव के बारे में हो, या **Ardioxidents** की कार्यप्रणाली हो या फिर फायटोकेमिकल्स के फायदे जो किसी भी फल या सब्जियों में मौजूद होते हैं।

परंतु इस जानकारी से बहुत सी गलत धारणाएं भी समाज में फैल गई हैं जैसे नमक से रक्तदाब में वृद्धि होती है, या कार्बोहाइड्रेट्स से मोटापा बढ़ता है या ग्लायसिमिक इंडेक्स आपके पोषण को दर्शाता है। इन सब की वजह से निर्माता प्रभावशाली तरीके से और ईमानदारी से अपने स्वास्थ्य वर्धक खाद्य पदार्थों का बोलबाला नहीं कर पाते।

पर इस बार हमने अलग दिशा में जाकर निर्माताओं से थोड़ी ढील देने को कहा। नहीं, इसका मतलब यह नहीं उद्योजक झुठे बड़े-बड़े वादे करे जानबूझकर अनिश्चितता पूर्ण और धोका देनेवाले हो। पर हम चाहते हैं कि वे फोर B विचारधारा (**Beverage, Break fast food bars & Baked goods**) से परे विचार करें।

वैसे तो स्वास्थ्य वर्धक खाद्य पदार्थों की भरमार है पर वास्तव में इनमें घूम फिरकर हम वापस इन फोर BS रुक जाते हैं। हम सही

अर्थों में स्वास्थ्यवर्धक खाद्य पदार्थों में क्रांती लाना चाहते हैं वह तब संभव है जब निर्माता अधिकाधिक खाद्य पदार्थों में स्वास्थ्यवर्धक तत्व जोड़ने को राजी होंगे। इस प्रयास में हमने जाना कि विभिन्न न्यूट्रास्यूटिकल्स में ४ BS का प्रमाण १० पर एक है।

इसके अनेक कारण हैं। व्यापार की दृष्टि से, अधिकाधिक पोषण एवं आसानी या सहजता को एक दूसरे से अलग कर पाना





नामुमकिन है। “हमारे पास इतना समय नहीं है इसलिए जलद मिलने वाले खाने में आधिकाधिक पोषण मिल जाए तो वह उसकी खरीद सबसे ज्यादा होगी”।

इसमें कोई असत्य नहीं और पेय पदार्थों और बारस के जायके या रुप रंग में कोई बदलाव नहीं है। इसका एक और कारण है। स्वास्थ्यवर्धक खाद्य पदार्थ कई वर्षों से हमारे इर्दगिर्द हैं। नाश्ते के सीरियल्स एक उदाहरण है — आम खाना जिसे विटामिन एवं खनिजपदार्थों से इस हद तक भर दिया गया है कि अब उनका मुकाबला बच्चों के लिए उपयुक्त विटामीनों से ही रहा है। पर आम खाने के तत्वों में वे बहुत बदलाव नहीं ला सकते। यह कहना है टोनी यंग का अमरीकी **Herbal Products Association** के सलाहकार है।

वो कहते हैं “न्यूट्रास्यूटिकल्स और उन जैसे पदार्थ आमतौर पर सुरक्षित माने जाते हैं यानी **Generally Recognized as Safe (GRAS)** इन्हे खाने में मिलाने से कोई हानी नहीं होती। **Food & Drug Administration (FDA)** ने अप्रत्यक्ष रूप से यह सूचना दी है कि शोरबा (सूप) या ब्रेकफास्ट सीरियल्स हमेशा परंपरागत खाद्य माना जाएगा।

यंग समझाते हैं कि कैसे ठीक इसी वजह से हम वापस **4 Bs** पर आकर रुक जाते हैं। “जब कंपनियां विशेष तत्व चुनते हैं जैसे सोया आसोफ्लेवोन्स या कुछ आयुर्वेदिक तत्व, वो इन्हें पेय पदार्थों या चॉकोलेट्स में डालना पसंद करते हैं। इन्हें स्वास्थ्यवर्धक तो कहा जा सकता है पर इनसे पेट नहीं भरा जा सकता। इसलिए आप ऐसे ऊंचे वादे पेय पदार्थों पर नहीं पाते जैसे खाद्य पदार्थों पर पाते हैं। गौरतलब है कि **FDA** की स्वास्थ्य वर्धक खाने पर आयोजित गोष्ठी में उद्योगकों ने इस प्रणाली का समर्थन किया और कोई नही प्रणाली शुरू ना करने की गुजारिश की इसका मतलब **4 Bs (Beverage, Bars, Break fast food bars & Bakery food)** में ही किए हुए वादे पूर्णतया: सच माने जा सकते हैं। पर यंग कहते हैं “मेरा मानना है कि अब इन सब बातों से ऊपर उठ चुके हैं और आधिकाधिक खाद्य पदार्थों में न्यूट्रास्यूटिकल्स मिलाए जा सकते हैं

। यह नए पदार्थ ही इनके व्यापार में मददगार होंगे जैसे लायकोपीन, हंलांकि इसका उपयोग पेय पदार्थों या नाश्ते में नहीं किया गया पर इसे जोर भोर से केचप (**Ketchup**) में इस्तेमाल किया गया। इसका सबूत उपभोक्ता की सजगता से मिल जाता है जो इस विचित्र नाक कॅरेटिकनॉइड लाइकोपीन के बारे में जानता है।

जब अंतराष्ट्रीय खाद्य सूचना विभाग, वॉशिंगटन ने २००५ में उपभोक्ताओं की सोच पर अध्ययन किया तो पाया कि **57%** जनता लायकोपीन के बारे में जानती थी कि इस तत्व से कॅसर जैसी बीमारी की रोकधाम की जा सकती है **49%** पहले से इसका फायदा उठा रहे थे (विशेष रूप प्रोस्टेट कॅसर के लिए)। यह भी देखा गया कि अंटीऑक्सिडेंट्स के फ्री रॅडिकल डॅमेज और ओमेगा—३ फॅटी एसिड्स पर होने वाले प्रभाव के बारे में और कई अधिक स्वास्थ्य वर्धक तत्वों के बारे में जनता में काफी जागरुकता थी।

जैसे ऊपर बताया गया **4B** के अपवाद में कई खाद्य पदार्थ हैं जैसे अर्काई सोरबे, अंडे, पीझा बटर, था ऑलिव तेल जिनमें आधिकाधिक ओमेगा—३ होता है, गोश्त लाइकोपीन के साथ।

पर कितना अच्छा होता यदि रात के खाने के साथ एंटी ऑक्सिडेंट्स हो, सूप के साथ कॅटेचिन हों, अंडों के रोल के साथ **EGCG** और फायटोकेमिकल पर आधारित बर्गर या चीज मिल जाते।

अपने खाने को कैसे स्वास्थ्यवर्धक बनाया जाए, ये बस हम अपने संयम से ही निर्धारित कर सकते हैं।





फूड इंग्रेडिएंट्स इंडिया
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खाद्य सामग्रियों की श्रृंखला में शामिल हर कड़ी के खरीददारों और विक्रेताओं के लिए एक-दूसरे से मिलने की एक उपयुक्त जगह है एफआई इंडिया 2010 ! यह ईवेंट आपको ढेर सारी नई खाद्य सामग्रियों के बारे में जानने और दुनियाभर से आए हज़ारों खाद्य सामग्री पेशेवरों से मिलने का एक अनोखा मौका देता है.



एक ऐसा ईवेंट, जिसे आप नज़रअंदाज़ नहीं कर सकते :

एफआई इंडिया में आपके आने से आपके व्यवसाय को फलने-फूलने में मदद मिलेगी. खाद्य सामग्री बाज़ार के अनेक दिग्गज व्यक्ति इस शो में मौजूद रहेंगे और यह आपके लिए उनसे मिलने का एक सुनहरा मौका होगा.

- ▶ भारत, चीन, मलेशिया, यूएस, इटली, फ्रांस, यूई, ऑस्ट्रेलिया तथा और भी अनेक देशों के उद्योग दिग्गजों और विशेषज्ञों के साथ सीधा संपर्क.
- ▶ एफआई इंडिया नवीनतम उत्पादों की पेशकश का एक मंच है – नवीनतम और अभिनव सामग्रियों के बारे में जानें ताकि आपके उत्पाद भीड़ से अलग होकर अपनी पहचान बना सकें.
- ▶ अपने व्यवसाय का समय एवं लागत की दृष्टि से किफ़ायती तरीके से संचालन करें और अपना ज्ञान बढ़ाएं.

प्रमुख विशेषताएं :

अंतरराष्ट्रीय एवं राष्ट्रीय प्रदर्शनीकर्ताओं से सामग्रियां प्राप्त करें

एफआई इंडिया में प्रदर्शनीकर्ता ऐसी नवीनतम सामग्रियां प्रस्तुत करेंगे, जो आपके भावी व्यवसाय के लिए आवश्यक होंगी. किफ़ायती कमोडिटी एडिटिव्स के साथ अभिनव सामग्रियों के बारे में जानें. प्रदर्शनीकर्ताओं की संपूर्ण सूची के लिए पृष्ठ 5 देखें.

फूड प्रोसेसिंग एंड पैकेजिंग इंडिया (एफपीआईआई) पेविलियन में पधारें

फूड प्रोसेसिंग, फूड साइंस और पैकेजिंग से संबंधित तकनीक और अपने समग्र संयंत्र संचालन को सही-सही बनाने के इस अवसर को गवाएं नहीं. टेक्नोलॉजी, हाईजीन एंड सेनिटेशन, हेल्थ, सस्टेनेबिलिटी, प्रोडक्टिविटी आदि में हुई ताज़ा प्रगति को जानें.

एफआई इंडिया कॉन्फ़रेन्स सीरीज़ 2010 के फ़ायदे

हम सात उच्च केन्द्रित और विषय-वस्तु चलि़त कॉन्फ़रेन्स मॉड्यूल प्रस्तुत करते हैं, जिनमें भारतीय एफ़एंडबी उद्योग के सबसे महत्वपूर्ण मुद्दे शामिल हैं और इनसे आपको जीवंत चर्चाओं और बहस के माध्यम से अपने सभी सवालों का जवाब पाने का मौका मिलता है. हर मॉड्यूल की खासियत होगी गहराई से किया गया विश्लेषण और केस स्टडीज़, जिन्हें प्रस्तुत करेंगे युनिलिवर, मैरिको, अमूल और गोदरेज हर्शेज़ जैसी बड़ी कंपनियों से सावधानीपूर्वक चुने गए वक्तागण. अधिक जानकारी के लिए हमारी वेबसाइट पर विज़िट करें :

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एस.ए. फ़ार्माकेम न्यूट्रास्यूटिकल फूड एवं बेवरेजेस में उपयोग होने वाले उत्पादों से परिचित करवाएंगे, जैसे प्रेगलेटिनाइज्ड स्टार्च, सोया लेसिथिन पावडर, सप्लीमेंट्स, फ़ाइबर्स, पोलिऑल्स, स्वीटनर्स जैसे फ्रुक्टोस एवं जाइलिटॉल और दुग्ध उत्पाद जैसे व्हे प्रोटीन हाइड्रोलाइसेट, लेक्टोफेरिन, एवं ऑइल एवं डेक्ट्रोस जैसे ओमेगा 3 वेज. ओरिजिन, एस्कॉर्बिल पल्मीटेट आदि.

बूथ डी 1 में एसए फार्माकेम पर पधारें.



नेशनल स्टार्च फूड इनोवेशन्स की एफआई इंडिया के लिए मुख्य थीम "हेल्थ एंड वेलनेस" तथा "टेक्सचर" पर आधारित हैं - "हेल्थ एंड वेलनेस प्लेटफॉर्म" के अंतर्गत फ़ाइबर एनरिचमेंट सहित शुगर रिप्लेसमेंट और फ़ैट पर फ़ोकस है. वांछित "टेक्सचर" विशिष्टताओं को विशिष्ट स्टार्च उत्पादों की श्रंखला का उपयोग करते हुए विभिन्न खाद्य एवं बेवरेज श्रेणियों की ज़रूरतों के आधार पर तैयार किया गया है. **बूथ डी 7 में नेशनल स्टार्च पर पधारें.**



रॉक्वेट प्रस्तुत करेंगे अपना मल्टी टोल स्वीटपर्ल, एक ज़बरदस्त स्वीटनर, जिसमें हैं पोषक फ़ायदे और मिठास की नई अनुभूतियां. साथ ही वे प्रस्तुत करेंगे न्यूट्रिओस, जो एक असाधारण पाचक सहनीयता वाले फ़ाइबर का एक अनोखा स्रोत है और न्यूट्रालिस, जो मटर से प्राप्त किए गए शाकाहारी प्रोटीन की एक नवीनतम पीढ़ी है.

बूथ सी 5 में रॉक्वेट पर पधारें.



एबी मौरी इंडिया यहां एफआई इंडिया में बेकरी संबंधी सामग्रियों की संपूर्ण श्रंखला प्रस्तुत करेंगे और पेश करेंगे बेकरी उद्योग के लिए मौरी नॉन डेयरी व्हिप टॉपिंग और संपूर्ण खाद्य उद्योग के लिए मौरी फ्रूट फ़िलिंग्स. यह कंपनी इन उत्पादों के उपयोग का प्रदर्शन करेगी, जो अनेक नए केक एवं ब्रेड प्रीमिक्सेस के लिए संपूरक है.

बूथ ई 3 में एबी/एब मौरी पर पधारें.



प्रदर्शनीकर्ता

ए बी मौरी इंडिया प्रा. लि. E3
एपीएस बायोयुप E9
एडवांस्ड एंजाइम टेक्नोलॉजी लि. B9
एके फ्लेवर्स एंड एरोमेटिक्स
प्रा. लि. A18
एलायन्स B31
अनिल प्रोडक्ट्स लि. C30
एसानी एगो ऑइल इंडस्ट्रीज लि. B27
अरुण एंड कंपनी (जायटेक्स) E11
एजाफ्रान इन्वेषन लि. B28
बर्न एंड सेक्मिट इंडिया प्रा. लि. B25
बीओएस नैचरल फ्लेवर्स (प्रा) लि. A16
काल्प्रो फूड्स प्रा. लि. B18
कारगिल B1
सीएनआई - कॉलोइड्स नैचरल्स इंटरनेशनल A5
कॉन्सिन्स स्पेशियल्टी कैमिकल्स प्रा. लि. A23
कॉर्नेल ब्रदर्स C7
डेवर्स एम.पी. ऑर्गेनिक्स/ट्रॉपिलाइट फूड्स
प्रा. लि. C3
डीकेएसएच इंडिया प्रा. लि. D18
ड्रायटेक प्रोसेसर्स (इं) प्रा. लि. B3
डीएसएम न्यूट्रीशनल प्रोडक्ट्स इंडिया
प्रा. लि. D5
ईएसी इंडस्ट्रियल इंग्रेडिएंट्स C1
ई.आई.डी. पैरी (इंडिया) लि. - पैरी
न्यूट्रास्युटिकल्स डिविजन E10
एफडीएल - फ्रुस्ट डे लॉसन इंडिया
प्रा. लि. A3
फैमिली सीरियल एसडीएन. बीएचडी. E7
फ्रायबरस्टार, इको. E12
फ्राइन ऑर्गेनिक्स E14
फ्रॉट्टिक एशिया पेसिफिक एसडीएन. बीएचडी. A21
गार्डन फ्लेवर्स कं. प्रा. लि. A20
ग्रेफिटी एक्सपोर्ट्स A1
गुजरात अंबुजा एक्सपोर्ट्स लि. B24
जेके सुक्रालोस A19
जुंगबुंजलाउर इंडिया प्रा. लि. C19
के. पी. मनीष ग्लोबल इंग्रेडिएंट्स प्रा. लि.
कमानी ऑइल इंडस्ट्रीज प्रा. लि. B11
केमिन फूड टेक्नोलॉजीस B30
ल्युसिड कॉलोइड्स लि. / ताईयो ल्युसिड
प्रा. लि. B5
माफको वर्ल्डवाइड कॉर्प. E19
महान प्रोटीन्स लि. E16
मैट्रिक्स फ्लेवर्स एंड फ्रेगरेन्सेस
एसडीएन. बीएचडी. A15
माइक्रोकेम लेबोरेटरी प्रा. लि. B29
एमएससी कं. लि. E8

नेशनल स्टार्च D7
नियोट्रोन एस.पी.ए. E2
ऑरोर फ्लेवर्स एंड कैमिकल्स प्रा. लि. B23
प्लांट लिपिड्स E1
प्रीमियम इंग्रेडिएंट्स, एस.एल. D3
प्रोवा एस.ए. B14
रिद्धी-सिद्धी ग्लूको बायोलिस लि. B7
राइकविटा/रिकेविटा (सिंगापुर) प्रा. लि. D14
रोहा डाइकेम प्रा. लि. E13
रॉकेट/रॉक्वेट इंडिया प्रा. लि. C5
एस.ए. फ्रामकिम प्रा. लि. D1
एसबीएच फूड्स इंटरनेशनल एफजेडई E9
एस.के. फ्लेवर्स एंड फ्रेगरेन्सेस A17
सवान्ना सर्फैक्टेंट्स लि. A11
सायाना कलर्स प्रा. लि. A4
एसबीएस शुगर फ्री एजेन्सी प्रा. लि. E15
सोलाए कंपनी इंडिया प्रा. लि. D16
सोनारोम इंडिया C9
स्पाइसेस बोर्ड A10
स्टर्न इंग्रेडिएंट्स इंडिया
प्राइवेट लिमिटेड C18
सुपरकेम इंडस्ट्रीज E18
सिंथाइट इंडस्ट्रीज लि. A24
तिआंजिन तैलियान एक्सपो कं. लि. D26
दि सुखजीत स्टार्च एंड कैमिकल्स लि. A2
उमंग फ्रामटिक प्रा. लि. A22
युनी-कॉलोइड्स इमेक्स प्रा. लि. B22
युनिवर्सल ऑलेओरेसिन्स E6
विल्को इंग्रेडिएंट्स प्रा. लि. C31
वास्ता बायोटेक प्रा. लि. D12
वल्मभदास कांजी लि. D11
सीसीसीएमपीएचआई
विचंगडाओ एफटीजेड युनाइटेड इंटरनेशनल इको. A6
जेजिआंग सिल्वर-एलिफेंट बायो इंजीनियरिंग
कं., लि. A7
लॉगकॉम इंटरप्राइज लिमिटेड A8
टीटीसीए कं., लि. A9
फ्रुफ्रेंग ग्रुप लि. A9B
वेइफंग एनसाइन इंडस्ट्री कं., लि. A12
हाईनान जॉंगक्सिन कैमिकल्स कं., लि. A13
आरजेडबीसी इंपो. एंडएक्स. कं. लि. B15
ए.एच.ए. इंटरनेशनल कं. लि. B16
जूचेंग डॉंगक्सिआओ बायोटेक्नोलॉजी
कं. लि. C10
शंघाई लकीस्टार बिजनेस एजेन्ट
कं. लि. C11
एचसीओएफ इंटरनेशनल डेवलपमेन्ट
कं. लि. C12

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मोबाइल टेली. _____ **

ई-मेल* _____ **

* अनिवार्य

** यूबीएम इंटरनेशनल मीडिया समय-समय पर एफआई इंडिया और अन्य संबंधित यूबीएम इन्वेन्ट्स के बारे में संबंधित अपडेट्स भेज सकता है. आपका ई-मेल तृतीय पक्षों को हस्तांतरित नहीं किया जाएगा. अपना ई-मेल पता देकर आप यूनाइटेड बिज़नेस मीडिया द्वारा प्रत्यक्ष विपणन के उद्देश्य से संपर्क किए जाने के लिए सहमत होते हैं. अपना मोबाइल नंबर देकर आप यूनाइटेड बिज़नेस मीडिया द्वारा आपसे मोबाइल टेक्स्ट अपडेट्स के साथ संपर्क करने के लिए सहमत होते हैं.

अ. आपका पद क्या है?*

(कृपया केवल एक ही विकल्प चुनें)

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द. आपकी कंपनी के व्यवसाय का प्रकार क्या है?*

(कृपया केवल एक ही विकल्प चुनें)

- ☐ 01 मैन्युफैक्चरर : इंट्रेडिपेंडेंट
☐ 02 मैन्युफैक्चरर : फूड एवं बेवरेज प्रोडक्ट्स
☐ 03 रिटेलर
☐ 04 डिस्ट्रीब्यूटर
☐ 05 कंसल्टिंग : फूड सेफ्टी, क्वालिटी एवं सर्विसेस
☐ 06 कंसल्टिंग : मैन्युफैक्चरिंग
☐ 07 कंसल्टिंग : मार्केटिंग एवं सेल्स
☐ 08 इंस्टीट्यूट/युनिवर्सिटी
☐ 09 गवर्नमेंट/ट्रेड एसोसिएशन
☐ 10 प्रेस
☐ 11 फूड सेफ्टी, क्वालिटी एवं सर्विसेस
☐ 12 एजुकेशन/ट्रेनिंग
☐ 13 माइक्रोबायोलॉजी
☐ 14 रिसर्च/साइंटिफिक
☐ 15 अन्य, कृपया उल्लेख करें.

- ☐ 08 डेजर्ट्स
☐ 09 फैट्स एवं स्पीड्स
☐ 10 फिश प्रोडक्ट्स
☐ 11 फ्लेवरिंग्स
☐ 12 फूड सप्लीमेंट्स
☐ 13 फूट एवं वेजीटेबल प्रोडक्ट्स
☐ 14 फ़ेवशनल एवं हेल्थ फूड्स
☐ 15 आईस्क्रीम
☐ 16 मीट एवं पोल्ट्री उत्पाद
☐ 17 ऑर्गेनिक फूड्स
☐ 18 पेट फूड एवं फ़ीड मील्ल्स
☐ 19 सॉसेज एवं सीज़निंग्स
☐ 20 स्नैक फूड्स
☐ 21 वेजीटेरियन फूड्स

ब. आपके उत्तरदायित्व का मुख्य क्षेत्र क्या है?*

(कृपया केवल एक ही विकल्प चुनें)

- ☐ 01 कंसल्टिंग
☐ 02 डिस्ट्रीब्यूशन
☐ 03 एजुकेशन एवं ट्रेनिंग
☐ 04 इंजीनियरिंग एवं प्लांट मैनेजमेंट
☐ 05 फ़ायनेन्स
☐ 06 जनरल मैनेजमेंट
☐ 07 हाइजीन मैनेजमेंट एवं सैनीटेशन
☐ 08 लीगल/रिगुलैटरी
☐ 09 मार्केटिंग एवं सेल्स
☐ 10 प्रोडक्शन
☐ 11 पर्सोनिंग
☐ 12 क्वालिटी कंट्रोल
☐ 13 रिसर्च एवं डेवलपमेंट
☐ 14 अन्य, कृपया उल्लेख करें

स. कृपया आपकी कंपनी में कर्मचारियों की संख्या बताएं.*

(कृपया केवल एक ही विकल्प चुनें)

- ☐ 01 1-24
☐ 02 25-99

फ. निवेश/क्रय के किस स्तर के लिए आप उत्तरदायी हैं?*

- ☐ 01 कुछ नहीं
☐ 02 65,000 से कम
☐ 03 65,000 - 69,999
☐ 04 610,000 - 649,999
☐ 05 650,000 - 699,999
☐ 06 6100,000 - 6249,999
☐ 07 6250,000 से अधिक

ग. सामग्री उत्पादों एवं सेवाओं के चयन एवं/या

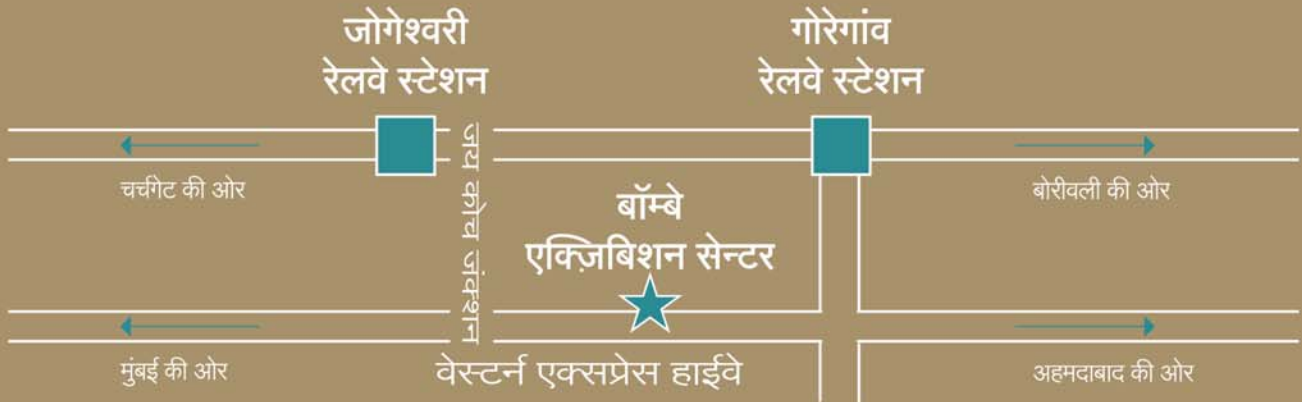
क्रय में आपकी प्राथमिक भूमिका क्या है?

- ☐ 01 क्रय की स्वीकृति देना
☐ 02 जरूरत बताना
☐ 03 सिफ़ारिश/प्रभावी निर्णय
☐ 04 कुछ नहीं

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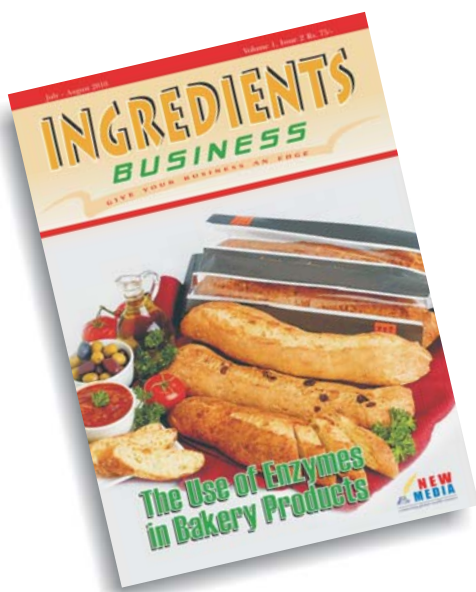


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