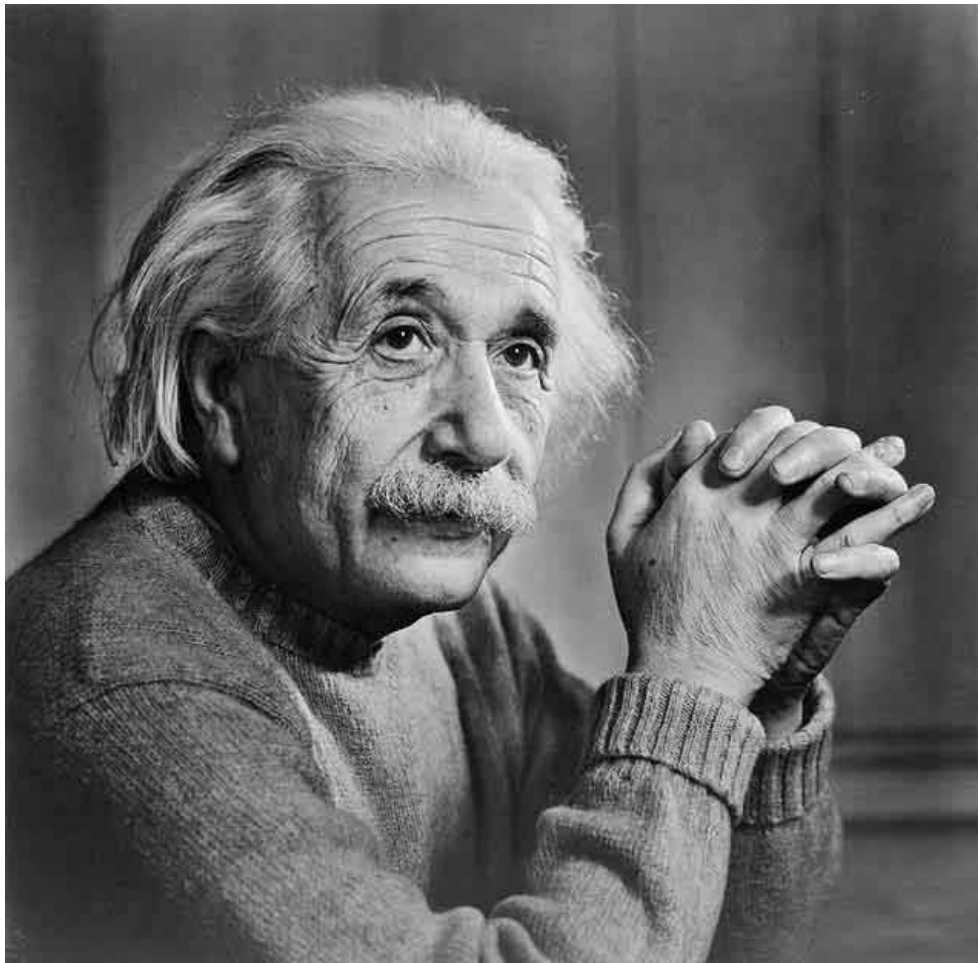




Research and Development in Food Processing Sector IN INDIA

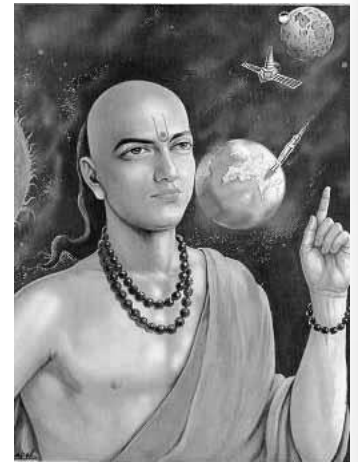
17th – 18th February 2016

Dr Prabodh Halde
President –AFST Mumbai



“We owe a lot to the Indians, who taught us how to count, without which no worthwhile scientific discovery could have been made”

Albert Einstein



India invented the Number System. Zero was invented by Aryabhata.



Harappa ●

● Mohenjo Daro

● Dholavira

When many cultures were only nomadic forest dwellers over 5000 years ago, Indians established Harappan culture in Sindhu Valley (Indus Valley Civilization)

Spices are India's Gift to world.

Silk Route /Spice Route

Ancient Indus Civilization



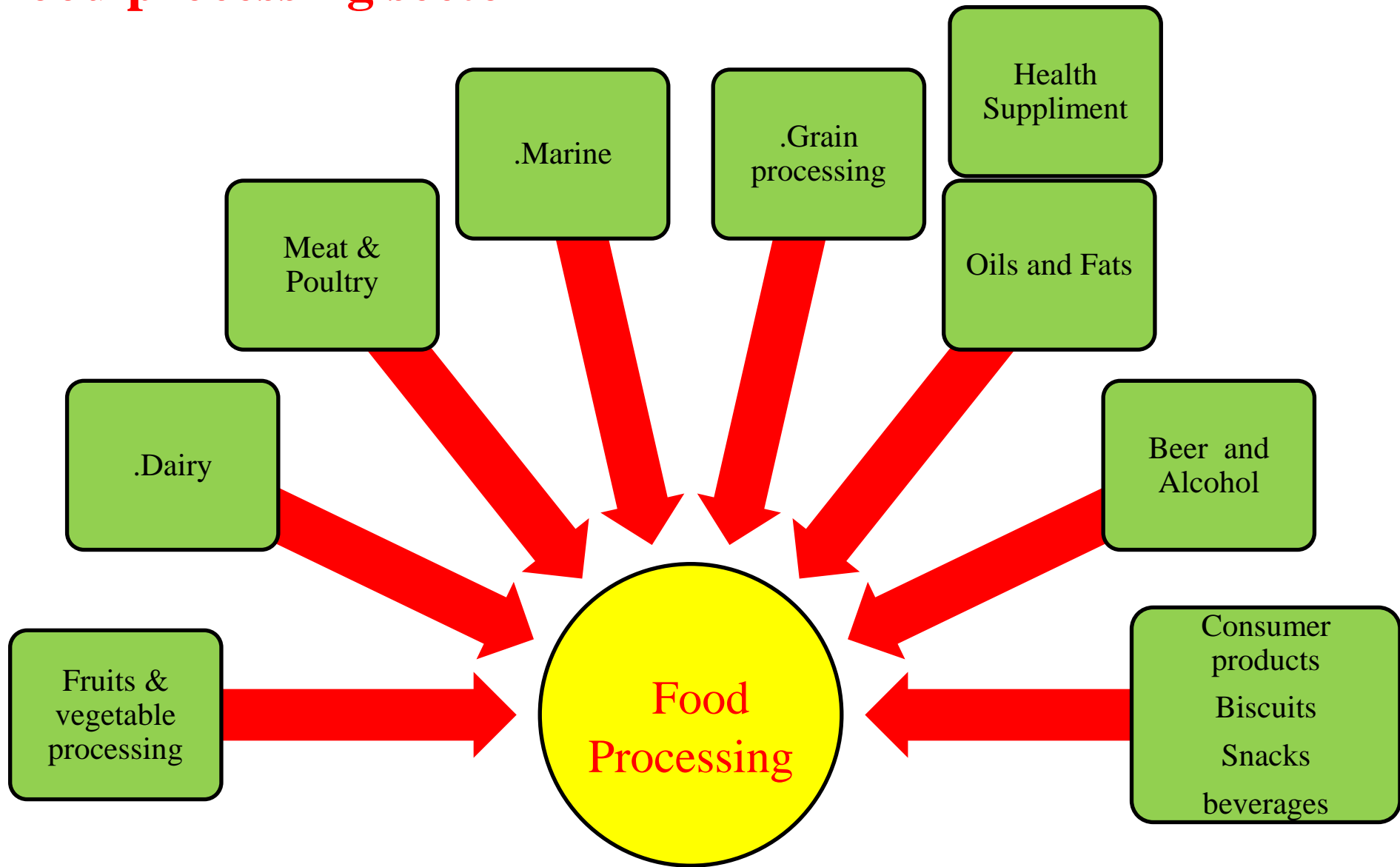
In ancient times, commodities like sugar, palm oil, coconut oil, cotton cloth, clarified butter, cast iron, tin sheets, copper vessels, dyes and pigments like cinnabar (ochre), indigo and lac, perfumes like sandalwood oil, musk tamarind, costus, macir, camphor, and even crude glass crockery were being exported from India



An overview of Indian Agriculture

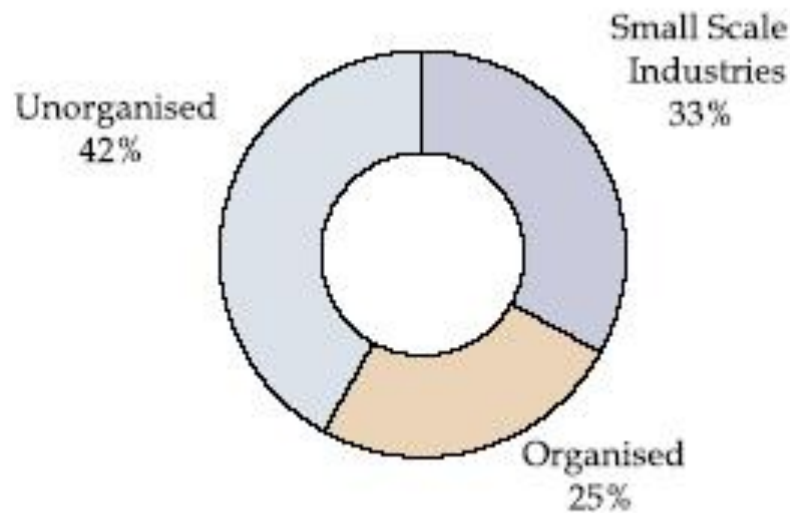
- Second largest arable land in the world
 - Diverse agro-climatic zones across the country,
 - Round the year sunshine
 - Potential to cultivate a vast range of agricultural products
 - Large marketable surpluses and abundant raw material for processing
 - Vast pool of skilled manpower in research and extension
- ❖ Good Scope for Food Processing.

Food processing sector



Structure of Food processing Industry

Structure of the Indian Food Processing Industry



75%
sector is
small

Source: FAIDA/Ministry of Food Processing Industries

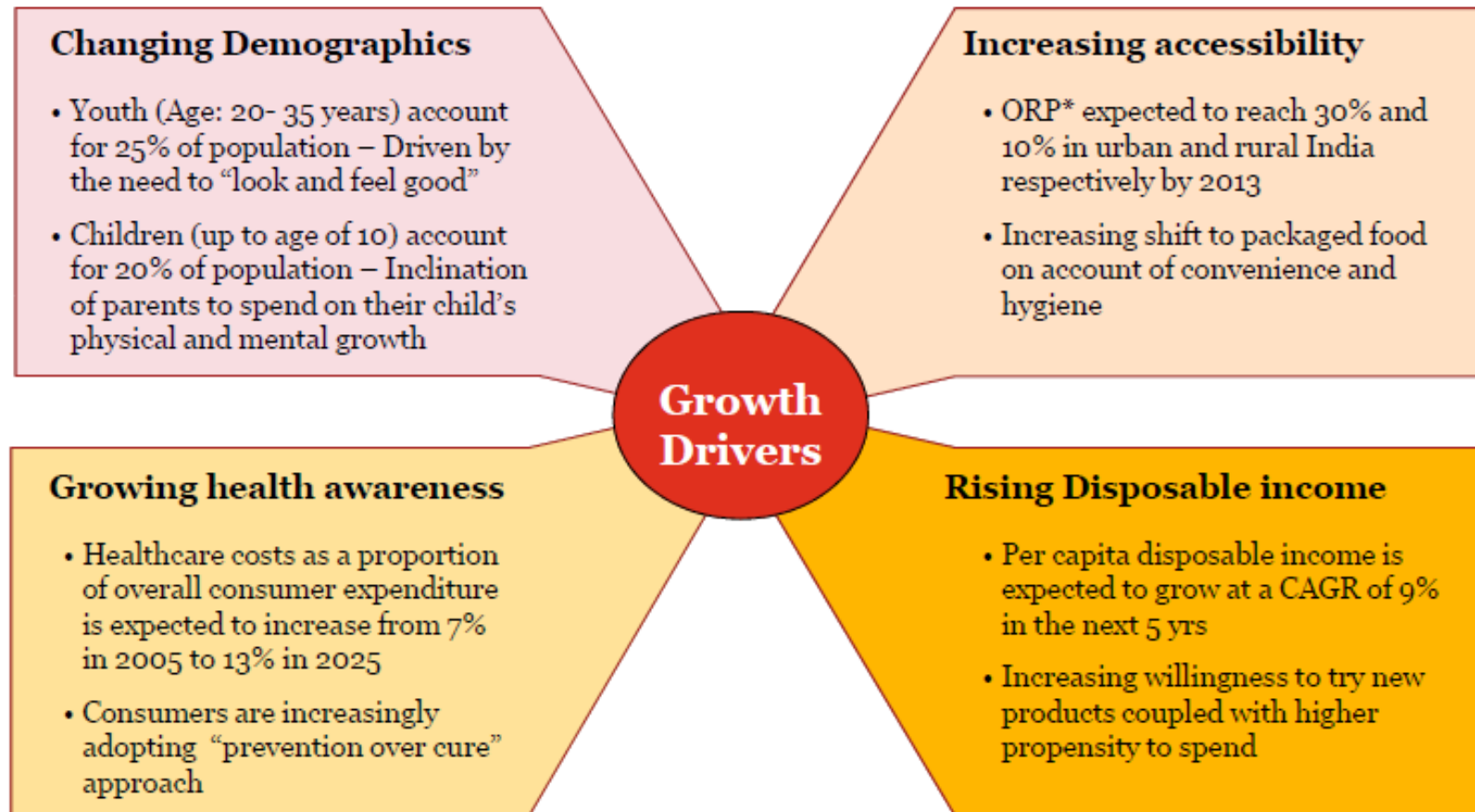
Un organized



Organised

Food Processing Industry Growth Drivers

Changing demographics, rising disposable income, increasing accessibility and growing health awareness among Indian consumers are the key demand drivers for FFB in India



Research & Development

Research is the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions.

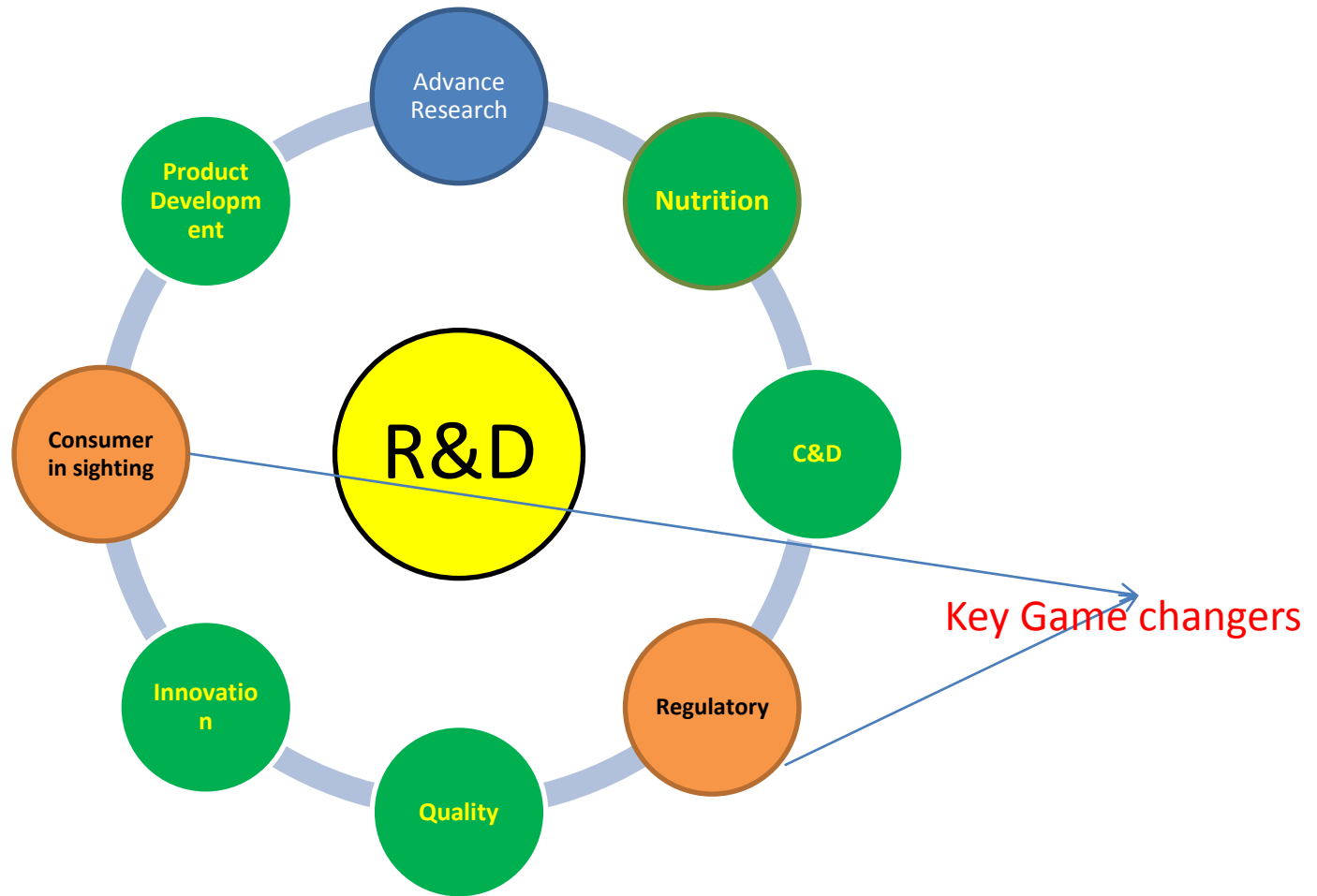
Oxford Dictionary

Research is to see what everybody else has seen, and to think what nobody else has thought.

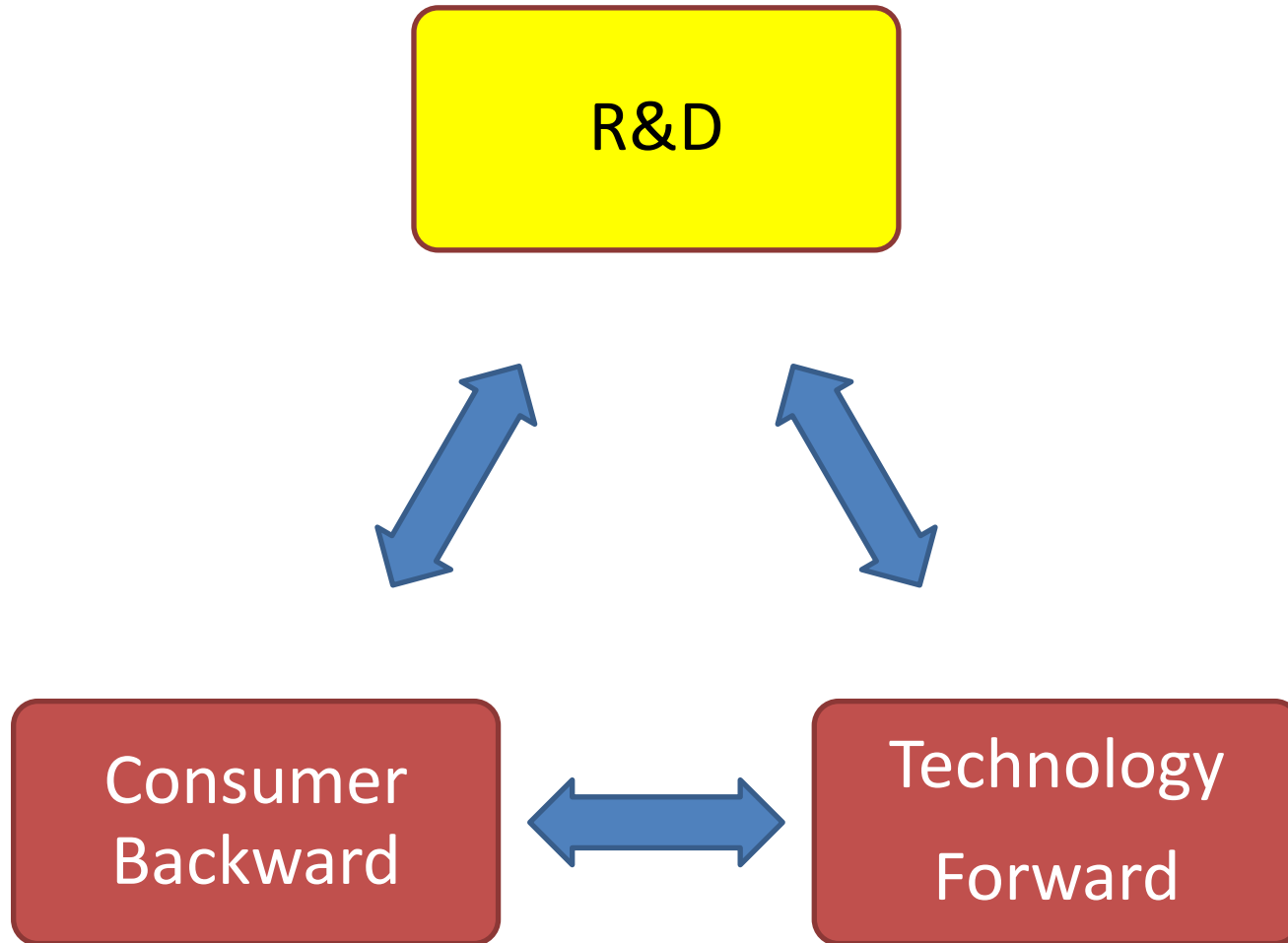
Albert Szent-Gyorgyi



R& D Canvas



Today's R&D



Consumer mapping
Un spoken needs
Market surveys

Extrusion
Baking
Low GI

R&D has changed the Game – Food Industry

Serendipity

“ Serendipity = Fortunate Accidents
[Situation] + People around [Sagacity] “

A quality that describes the nature of discovery.

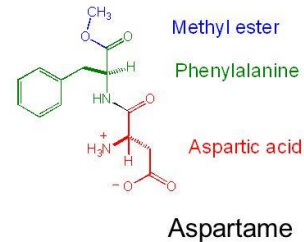
Fortunate accidents are tiny,
unnoticed events. Accidents are not magical occurrences.

Someone notices them, joins dots and gives meaning to the events.

Aspartame

Discovery story:

- In 1965 by Jim Schlatter working on discovering new treatments for gastric ulcers.
- Made a dipeptide intermediate, which he spilled on his hand
- Tested the dipeptide in coffee



- 4 calories per gram
- 200 times sweeter than sugar

Yr 1990

Evolution of R&D



Wheat Grains

RM



Wheat Flour



Packed Atta

Finish Product



Yr 2000

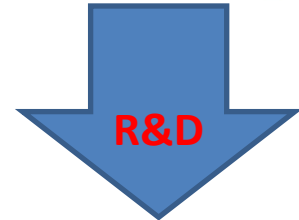
Evolution of R&D



Wheat Grains



Wheat Flour



Value addition through formulation



Multi grain atta

Yr 2010

Evolution of R&D



Multi grain cookies



Multi grain Bread



Multi grain Khakra



Value addition through consumer in signing

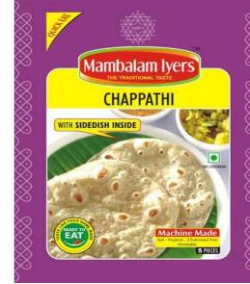
Technology Forward



Cut vegetables



Sonpapadi



Packed Dahi and Roti



Masal oats



Panipuri



Tetra pack technology



Dosa- Batter



Pouch filling technology

Consumer Backward



Granula Bar



Corn Flakes



Flavored water



EVERY ONE WANTS TO LOOK HEALTHY AND YOUNG

Who Represents the “Aging” Segments?

40-50's



Milind Soman
Born 1965

50-60's



Shashi Tharoor
Born 1956

60-70's



Sunil Gavaskar
Born 1949

70-80's



Amitabh Bachchan
Born 1942

100+



Fauja Singh
Born 1911



Madhuri Dixit
Born 1967



Hema Malini
Born 1948

FUNCTIONAL - INGREDINATS AND ACTIVES

Functional components	Source	Potential benefits
Carotenoids		
Alpha-carotene/Beta-carotene	Fruits, Vegetables, Herbs	Neutralize free radicals, which may cause damage to cells
Lutein	Alfalfa	Reduce the risk of macular degeneration
Dietary Fibre		
Insoluble Fibre	Wheat Bran, Flax, Hemp, Pulses (Legumes)	Reduce risk of breast or colon cancer
Beta-Glucan	Oats, barley	Reduce risk of CVD. Protect against some cancers; lower LDL and total cholesterol
Soluble Fibre	Psyllium, Flax, Hemp, Pulses	Reduce risk of CVD. Protect against some cancers; lower LDL and total cholesterol
Resistant Starch	Potato	Reduce risk of CVD. Lower LDL and total cholesterol

Global Trends

Globally, the FFB market is trending towards increased consumer awareness, focus on preventive care and certifications/regulations to build credibility in the market. The Indian market is expected to follow suit

- 1 Increased use of **natural products** like ginseng, etc. as consumers prefer to avoid artificial ingredients
- 2 Increasing shift to **wholesome nutrition** rather than functional benefits that address a particular health concern
- 3 Increased consumer attention to **nutritional labels** rather than reliance on advertising claims by companies
- 4 Health benefits alone do not suffice - Increased focus on healthy food that is **also tasty**
- 5 Increasing **certifications and regulations** in order to build credibility in the market

Global trends
expected to be seen in
the Indian market
going forward

INDIAN FOOD TRENDS

- Big trends that can be derived from consumer behaviour are

FOOD SAFETY

**e.g. Organic, All
Natural
/Traditional**

CONVENIENCE

**RTE, RTC, On the
go foods**

HEALTH

**Functional food,
nutraceuticals**

R&D Status Today

- Capability is a strengths
- 200 Plus food technology colleges
- We are Global competitors
- Over 1000 food companies have R&D setup
- 50 companies are registered with DSR (department of science and Technology
- Support from Ministry of food processing
- We can cater the entire world
- Positive environment

Conclusion

- Food Processing sector is growing at 8% plus
- R&D is changing the face of food processing
- Value addition and consumer insight & Regulatory is playing bigger role
- India has capability to cater world's need
- Health /Convenience/Natural : are new trends
- Government's schemes like Make in India /Skill india/Start-up india is fueling the growth of Food Sector
- FDI will also help R&d investments



Thank You Any Query.....

Prabodhh@maricoindia.net

9820278746