

# **Incorporating Food Safety during the Development of New Products**

**K.DEVCHAND**

**FOOD and COSMETIC TECHNOLOGIES**

**17<sup>th</sup> May 2017**

# DEVELOPMENT OF NEW PRODUCTS AND PROCESSES

- New products succeed from a combination of Sensory Attributes such as Aroma, Taste, Colour, Touch, and Sound (Snap, crackle and pop)
- Nutrition and Wellbeing (Positive Nutrition for a healthy lifestyle)
- Indulgent flavours with new taste profiles
- Affordability and creating Food Security
- New process technology that improves nutrition and safety
- New flavour combinations into New food substrates
- Innovative packaging technology to protect product quality and improve shelf-life.

# CONSUMER DEMANDS

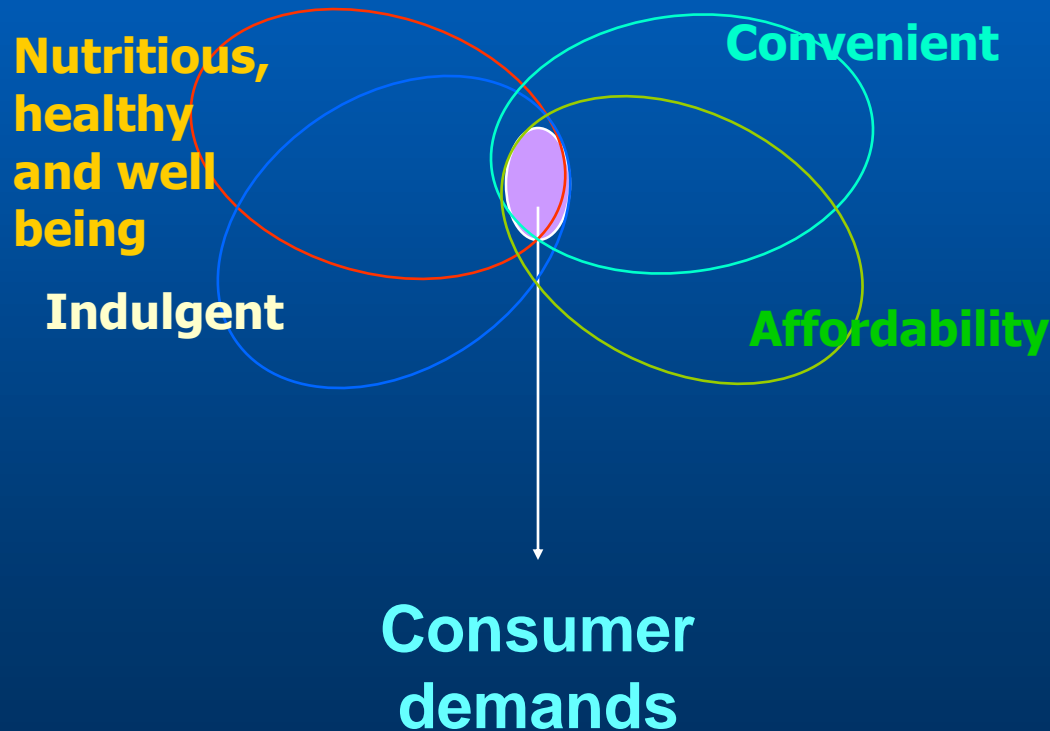
**Healthy and  
well-being**

**Convenient and  
Safe**

**Indulgent**

**Affordable**

# MEETING CONSUMER DEMANDS



# WHAT PEOPLE CHOOSE TO EAT...

- **DEPENDS:** Age

Habits

Product Presentations

High Quality Nutritious Safe Foods

**W.R.T. TEENAGERS:** Convenient / On the run

Trendy

Tasty

Low cost foods appeals

Healthy / Improves their Appearance

**THEY CARE IF FOODS ARE ENVIROMENTAL FRIENDLY**

# WHAT PEOPLE CHOOSE TO EAT...

- Consumers are concerned what they eat and read labels
- Request Special Dietary Requirement
- Generate choices for Religious Reasons
- Engage or boycott food products for Political Reasons
- Sports and Muscle building, Positive Nutrition (Wellbeing)
- Healthier foods (less fat, less sugar/ low GI, less salt, more dietary fibre, high protein quality than quantity)
- Health and Diet conscious (Organic, Fair Trade, G.M Free)
- Ready to eat Fast Foods when affordable or on the run

# WHY? NEW FOOD PRODUCT DEVELOPMENT

- **Successful new product must appeal to target market**
- **Peoples taste and diets change over time and food goes in and out of fashion.**
- **There is a lot of reasons why people make different food choices today compared to 20 years ago.**

# NEW FOOD PRODUCTS ARE DESCRIBES AS THE LIFE BLOOD OF FOOD COMPANIES

- **PRODUCT FAILURE** – Financial Loss
- **PRODUCT SUCESESSES** – Increased Target Market
- **NEW PRODUCT OR PROCESS DEVELOPMENT** is to create or innovate something new that has never been presented in the market place.
- **INNOVATED PRODUCT**- make new changes in or to an existing product or Totally Novel.
- **CREATIVE PRODUCT**-bring into existence (never seen before products, new process technology, improved texture, new appearance/shape and innovative flavours.)



# MY EXPERIENCES IN FOOD PRODUCT DEVELOPMENT RISKS FACTORS

- The Loss of flavour in a RTD Sports Energy Drink in Tetrapak packaging on shelf and storage.
- After several consumer complaints of flavour loss the product was investigated and the complaint was valid by virtue of examination of the inner packaging material that showed blisters contain liquid. On Gas Chromatography analysis of the residing liquid between the LDPE-FOIL/board material was the volatile oils components that made up of the flavours of the respective Energy Drinks.
- This loss of flavour stems from the migration of the flavour oils from the product to between the LDPE-FOIL/BOARD construction.
- Subsequently a new packaging construction was evaluated via shelf-life testing and re-launched under a new Brand.

# THE TAINING OF TEA BY PENTADECANE A HYDROCARBON PRESENT IN PRINTING INK SOLVENTS

Inks used for printing are made up of dye pigments dispersed in a hydrocarbon base with a quick drying solvent. Such inks used on printing cartons used for teabags . During sales of this Tea brand, several consumer complaints were received on a chemical taste in the brewed tea, which resulted in a quick product recall and intensive research on the source of the taint.

The taint resulted from the hydrocarbon solvents of the printing inks used to print the tea cartons This was established by conducting taint exposure tests of virgin tea exposed to the offending packaging material at an elevated relative humidity. Tea tasting panels revealed that the offending taint was identified as the source of the chemical taste.

Headspace Gas Chromatography analysis revealed that the hydrocarbon Pentadecane was the cause of taint in the offending teas and as part of quality control all inks used in printing, measured for Pentadecane levels prior to and after printing tea cartons.

# EVALUATION OF A LOSS OF FRAGRANCE AROMA IN A PREMIUM PERFUME

Storage Period (Hours) @ 45°C	Sensory Comments	Observation under UV light
0 (Control)	Strong fragrance Acceptable	Strong homogeneous
24	Fragrance Acceptable	Slight decrease in homogeneous
48	Fragrance Slight less of aroma Acceptable	Slight decrease in aroma, surface separation noticed
72	Fragrance decreased Noticeable	Increase in surface separation
96	Moderate decreased, Unacceptable	Radical increase in surface separation
120	Noticeable decrease of the fragrant aroma	Total separation, visibly evident

Separation is noticed due to the fact that the fragrance is oil based and separates from the solvents

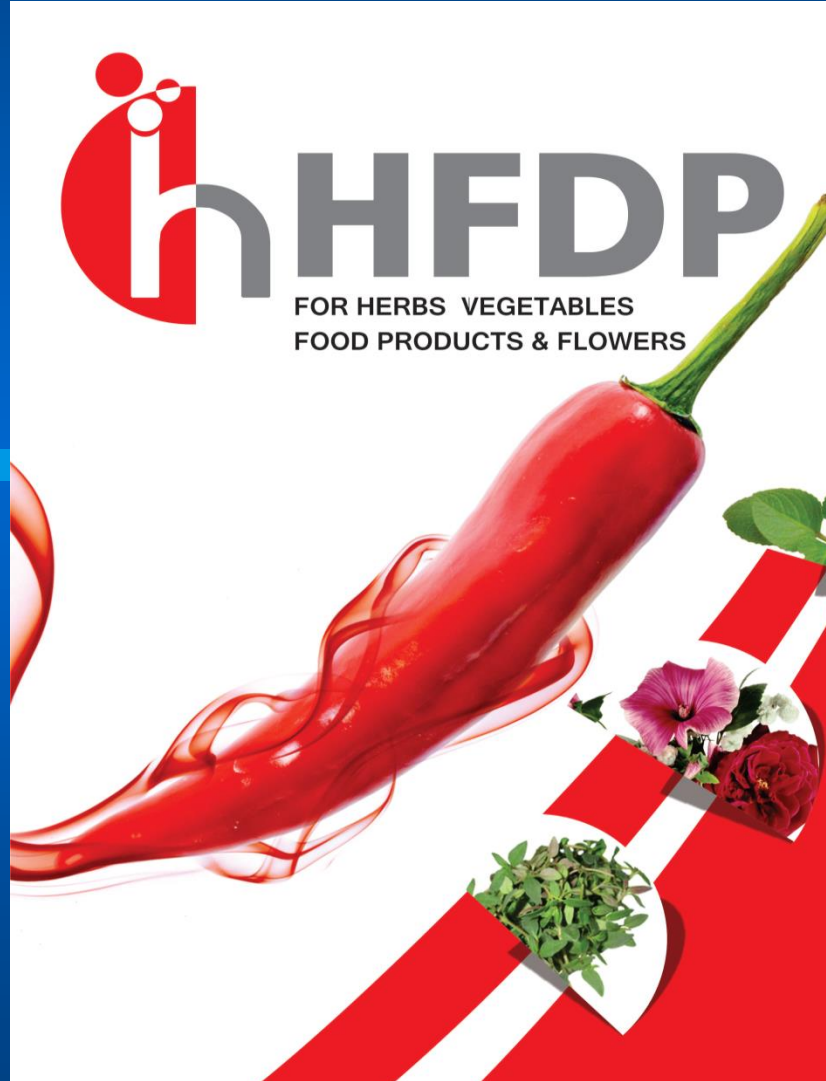
# Chocolates exported to Singapore from S. Africa lost integrity by poor container management on ship.

Chocolates manufactured in South Africa were exported via sea freight to Singapore in 2 refrigerated containers stored in the hull of the ship. On the trip some containers were off loaded at various ports along the way. However, one of these container was left on deck during movement of containers at different ports. This container underwent higher temperature exposure during daytime, and lower temperature at night resulting in the chocolates developing white specks on the surface of chocolates due to fat bloom and sugar bloom. These white specs compromised the appearance of the chocolates, which was rejected on delivery to the customer. The rejected product was dumped at sea on the ships return trip.

# FaCT INNOVATION - HEAT FREE DRYING PROCESS



FOR HERBS VEGETABLES  
FOOD PRODUCTS & FLOWERS



First Floor, 61 Hannah Rd,  
Glenwood, Durban,  
South Africa  
P.O. Box 17229, Congella,  
South Africa, 4013  
Tel: +27 (0)31 2056410  
services@factlabs.co.za  
www.factlabs.co.za

***Drying generally requires Heat***

## PROBLEMS WITH HEATING

- Quality reduced
- Negative Appearance
- Nutritional Properties are affected

## HFDPP (HEAT FREE DRYING PROCESS)

- Removes freely available water without damaging the Cellular Structure
- It keeps vital Nutrients, Vitamins, Enzymes, Volatile Oils, Chlorophylls and Aromas intact
- Process is Environmentally Friendly



# ORGANIC OYSTER MUSHROOMS

- PEARL OYSTER



- PINK PEARL OYSTER



# FaCT INNOVATION – MEAT ANALOGUE FROM OYSTER MUSHROOM



**o'shroom**  
**meat**

**Alternative Vegetarian**

**Meat Analogue**

## Why?

**Cooked Oyster Mushrooms  
has a Meat-like texture and taste.**

**Suitable for Different Processing  
Techniques.**

**Wide Variety of Processed Food Options  
- Burgers, Sausages, Mince and  
Meatballs**

## Auxiliary Benefits

**New Source of Meat-like Products to  
address needs of Low Income Households**

**Growing of Oyster Mushrooms provides  
employment opportunities and creates  
New Food Source**

**Fresh Mushrooms a delicacy for  
restaurants and an export opportunity**

# FaCT INNOVATION – LOW GI SUGAR



## LOW GLYCEMIC INDEX SUGAR “a Functional Food Ingredient”.

The average sugar consumption in South Africa is about  
**1.4 million tons per year per 50 million people**

(ILLOVO SUGAR LTD Annual Report).

The consumption per person per year is approximately

**29kg which equates to almost 80g /day.**

Problems associated with Sugar  
(Diabetes, Obesity, Hyperactivity) ?

**Low GI sugar is the solution!**



# FaCT INNOVATION - LOW GI LoGiCal SUGAR

SAMPLE	STATUS
SUGAR	GI Value = 64
LOW GI SUGAR MIX A	GI Value = <55
LOW GI Belgian Hot Chocolate A	GI Value = 40
LOW GI Belgian Hot Chocolate B	GI Value = 38
LOW GI Slimmers Choice Brown Hot Chocolate	GI Value = 48
LOW GI Slimmers Choice White Hot Chocolate	GI Value = 40
LOW GI Nesquick Type Milk Modifiers:	
• Chocolate	GI Value = 38
• Caramel Fudge	GI Value = 29
LOW GI Milkshakes:	
• Chocolate	GI Value = 48
• Strawberry	GI Value = 39
LOW GI Energy Drinks:	
• Orange	GI Value = 44
• Naartjie	GI Value = 49

# HOW FAR DO WE WANT TO TAKE INNOVATION?



**BEYOND  
IMAGINATION**



**As long as it is  
beneficial to the  
Consumer**

# WHAT'S TRENDY IN 2017 ?

- Fair trade products
- Foods associated with lifestyle changes and well being with respect to heart diseases, diabetes, cancer, AIDS, malnutrition and mental health.
- Heritage whole grains
- Products with minimal additives, artificial flavours, sweeteners and colours
- Humanly and sustainably raised eggs and meat products
- Socially conscious manufacturers and restaurants
- Easy to read labels
- Farming and Job Creation



Let there be work,  
bread, water and  
salt for all.

**Nelson Mandela**



# ADDRESSING FOOD SECURITY

The Rome declaration on world food security and the world food summit plan of action clearly indicate that there is a great need for food technologists and allied technologists to address the food shortage worldwide.

**There are 7 billion people on our planet. 1.2 Billion of those go to bed **HUNGRY EVERY NIGHT****

**There are 55 million people in SOUTH AFRICA. 14 million of those go to bed **HUNGRY EVERY NIGHT****

**How can we help?**

# AN OLD CHINESE PROVERB

If you buy what you do not need (rich food and worries)

You shall need what you cannot buy (Health and long life)

# THANK YOU FOR YOUR ATTENTION

