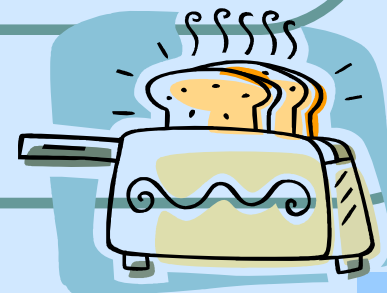


# Food Safety (level 3)

## Food Additives FS0724

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## Harmful food additives:

- Sodium nitrite and nitrate
- Aspartame
- Acesulfame
- Monosodium glutamate (MSG)
- BHA and BHT
- Transfat
- Colour additives
- Potassium bromate
- High fructose corn syrup (white sugar)
- Olestra
- Propylgallate
- Sodium chloride



## Sodium nitrite and nitrate:

- Used as preservative, colouring and flavouring agent
- Found in hotdogs, smoked fish , **sandwich meats** , **Sausages** ,canned meat
- Keep meat that bright red colour and help prevent bacterial growth



## Sodium nitrite and nitrate:



Side effects : nausea , dizziness , headache ,vomiting

- Studies confirm that nitrites and nitrates can cause prosatate,breast,gastric cancer in humans

• Link to cancer – nitrites can lead to formation of chemicals called **NITROSAMINES** in the digestive tract which may cause cancer.

- Nitrates are associated with increased miscarriages, fetal deaths , and birth defects in laboratory animals.





## Aspartame :

- An artificial sweetener
- Sold as Nutrasweet , Equal
- Found in frozen desserts, gelatin desserts, **diet soft drinks** low calorie drinks, **yoghurt, beverages**



## Aspartame :



Chemically it is **Aspartylphenylalanine methylester**

### Side effects:

It has strong excitatory effect on the brain leading to anxiety, depression , dizziness , headache , visionloss and **Brain cancer.**



## Aspartame :



### Link:

**Phenylalanine** –tyrosine- aminoacid used to make , **excitatory neurotransmitters ,catecholamines** that energise you and speed up body function

**Aspartic acid** -- **an excitotoxin** i.e, it overstimulates nervous system

**Methanol** – it is metabolised to formaldehyde which is “ **known human carcinogen**”

**CAUTION:** *Phenylketonuric patients* must exclude aspartame in their diet ; also *pregnant women* must exclude.





## Acesulfame K :

- Artificial sweetener ,  
200 times more sweet than sugar

- Found in soft drinks , **baked foods** , chewing gum , **gelatin desserts**, alcohol

**Side effects:** some studies shown that it may cause cancer in mice

**Link:** it contains known carcinogen [METHYLENE CHLORIDE](#)







## Monosodium glutamate:

- Flavour enhancer
- Chemically it is sodium salt of glutamic acid and a form of glutamate
- Found in **soups**, chips, **crackers** , **salad dressings**



## Monosodium glutamate:

### Side effects:

Cause allergic and behavioural reactions including headache , weakness , nausea , altered heart rate, a burning sensation in forearm and back of neck, tightness in the chest

**Link:** *Excitotoxin* – that overexcites cells to the point of damage/death

### *Possible neurotoxin*

Affects neurological pathways of brain and disengage the “**I’m full**” function which explains effects of weight gain



*Monosodium glutamate:*

**Caution:danger**

- ❑ Pregnant women who ingest this are at **increased risk of developing fetus with smaller pituitary, thyroid ,ovary/testis that leads to reproductive dysfunction**
- ❑ Neonatal exposure has been linked to stunted growth and obesity as there is **reduction in the release of Growth hormone.**





## BHT and BHA:

- Antioxidant and preservative.
- Derived from petroleum
- Found in potato chips, vegetable oils



## BHA and BHT:



### Side effects :

- Allergic reactions , hyperactivity and **CANCER** in humans
- Behavioural problems with **BHA** as some people cannot metabolise it
- **BHT** toxic to nervous system and liver

**Link to cancer:** **BHA** interacts with nitrites to form chemicals known to cause changes in the DNA of cells



## **Butylate Hydroxyanisole(BHA)**

**Chronic exposure – gall bladder, endocrine,  
lungs, thorax -tumors**

**Mutagen – DNA inhibition, unscheduled  
DNA synthesis, DNA damage**

**Chronic exposure – reproductive damage**



**Transfat** : also known as partially hydrogenated vegetable oil



**Hydrogenation** – process of adding H<sub>2</sub> gas under high pressure to liquid oils to turn into solids at room temperature.

Found in **deep fried fast foods** , **pastries** , **crackers**,  
butter



## Transfat :



### Side effects:

- Atherosclerosis and CVS disorders
- Obesity and diabetes
- Immune dysfunction
- Birth defects
- Problems in bones and tendons

### Link:

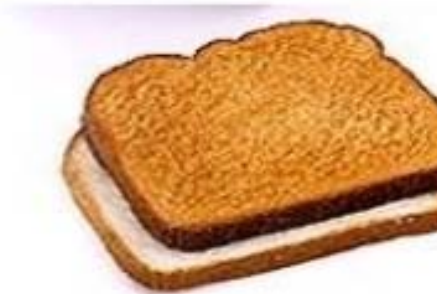
- Transfat clog arteries and lead to heart disease and stroke
- Increase LDL and decrease HDL



## Potassium bromate:

▪ Additive that helps dough to become full and obtain a greater volume , during baking

▪ Found in  
**bread**s , rolls ,  
 **pizzas**



## Side effects:

- Known to cause cancer in animals
- Even smaller amounts in bread can create problems for humans





## Colour additives :



Most dangerous additives  
Made from coal tar / petroleum

Found in **drinks** , jellies , sweets , **icecream**



## Colour additives :



**Dangerous additives** – blue 1 and blue 2, red 3 , green 3 and yellow 6



**Side effects** : allergy , asthma, hyperactivity and possible carcinogen

**Link to cancer** – cause chromosomal damage



## Colour additives- link to hyperactivity

- ❑ In 2008 the European Food Safety Authority (EFSA) assessed this study.
- ❑ They concluded that the findings may be relevant for specific individuals showing sensitivity to food additives.
- ❑ Since mixtures and not individual additives were tested in the study, it is not possible to ascribe the increased hyperactivity to any of the individual food additives.





## *Colour additives- link to hyperactivity*



❑ In 2007 a group of British scientists published a study showing that children who drank a mixture of 4 synthetic food colours and a food preservative became more hyperactive than when they did not drink the mixture.



❑ The level of food colours and food preservative in the experimental drink was comparable to the level that children may drink or eat in real life if they consume brightly coloured sweets or soft drinks.



## High fructose corn syrup-H F C S



- Flavour enhancer
- Derived from corn starch , usually a combination of 55% fructose and 45% Of sucrose
- Found in softdrinks, baked foods , ketchup

### Side effect :

▪ Weight gain , diabetes and increased risk of heart disease particularly in men

▪ May alter **Magnesium balance** in the body leading to accelerated bone loss

**Link: impairs function of leptin that controls satiety**



## Propyl gallate :



- Used in conjunction with BHA and BHT
- Found in meat products, chicken soup base and chewing gum
- Animal studies have suggested that it could be linked to cancer



## Olestra:

- Synthetic fat
- Found in potato chip brands



## Side effects :

- Severe diarrhea ,abdominal cramps and gas
- It also inhibits vitamin absorption from fat soluble carotenoids that are found in fruits and vegetables





## Sodium chloride (table salt):



- ❑ Flavour enhancer and preservative
- ❑ During the refining process , naturally occurring minerals and trace elements are stripped away , then it is blasted with high heat , bleached and chemicals like aluminium and **anti-caking agents** are added to it.



## Sodium chloride (table salt):



### Side effects :

- Too much processed salt intake **burdens the kidneys and adrenals**
- **Depletes calcium** and interferes with absorption of essential nutrients
- Causes high BP, heart attack and stroke

**“low sodium salt” is more toxic , as chemicals are added to it to remove sodium and simulate the synthetic taste of salts**



## • Junk foods



- It does not provide our body with the essential nutrients, but harm our health as well as weaken our immune system.
- They contain substantial amount of nitrite, salt, food colouring, stabiliser and food additives which can harm our health.
- The long term effect of junk foods  
- obesity, atherosclerosis, **HYPERTENSION etc**



## What are junk foods?



1. Grilled or roasted foods
2. Deep fried foods
3. Instant foods
4. Soft drinks
5. Canned foods
6. Pickled foods





## Grilled or roasted foods:

- It contains very high proportion of “**TRIPHENYL SIBING TOPIRAMATE**”, which is a carcinogen.

Eg: found in barbecue , grilled /roasted meats





**Grilled or roasted foods: consuming  
grilled foods regularly is dangerous:**

1. contains a large number of **triphenyl Sibling topiramate '( carcinogen)**,
2. a burning chicken = 60 cigarettes toxicity,
3. resulting protein charring causes (heavier burden on the kidneys and the liver)

▪ *Triphenyl sibling topiramate on coming contact with gastric mucosa , the possibility of getting gastric cancer is very high*



## Deep fried foods :

- They contain **ACRYLAMIDE, a carcinogen.**
- It is also found in vehicular emission and potato chips.
- Also they contain **ALUM** that impairs memory, harm brain and nerve cells, besides causing irritability and depression once it is absorbed into our body



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## Instant foods :

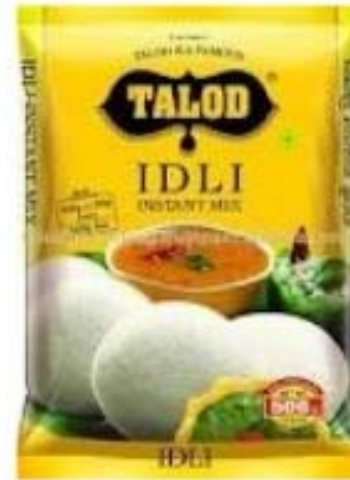
- ❑ High calorie but no nutritive value as they lack essential vitamins and minerals , trace elements that leads to nutritional deficiency
- ❑ They contain very high content of salt , colouring and food additive .





# Instant foods :

**Sideeffects** : prolonged intake of these foods may cause,obesity, **cancer** , **hypertension** .



## Soft drinks:

They contain lots of PHOSPHATE ,  
CARBONATE which will lead to the  
loss of calcium from our body





## Canned foods:

- They are High in calories , low in nutrients.
- These foods refer to any fruit , meats and vegetables that were canned to preserve for longer storage.





## Canned foods:



### Sideeffects:

- **Aluminium** used to make a can is easily contaminated when exposed to the surrounding air.
- People who get accustomed with canned foods are more likely to have high proportion of **ALZHEIMER'S disease** developed.



## Pickled foods:

- May be contaminated with microbes during the food handling process .
- May cause **nasopharyngitis ,hypertension, harmful to stomach.**



# FOOD SAFETY

The practical certainty that injury or damage will not result from a food or ingredient used in a reasonable manner or quantity.

# Consumer concerns and issues regarding use of food additives:



- Safety

- Quality

- Claim Labels

- Packaging and

- The value of money spent on package foods





# Safety of Additives



- Tested on 2 animal species
- Determine the highest dose that produces no observable effects level (NOEL)
- Prorate the dose to human dose
- Divide the dose by 100 to establish a margin of safety
- If it is shown to cause cancer even at the high dose, it is taken off the market



# Government controls:



- Only certain additives are allowed for use
- Amounts are controlled & must be noted on the label
- Maximum amounts used are small & must serve a useful purpose
- Are safety tested by the industry & these tests are monitored by Health Protection Branch
- Monitoring usage of additives is ongoing



## What can you do?



**Fresh ,unprocessed food not only is safer but also tastier for your family**





**We are**



**What we eat?  
&  
How we eat?**

**Take home message**

**Eat freshly prepared foods and  
stay healthy**

