



# **NUTRITIONAL NEEDS OF THE ELDERLY**

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# NUTRIENTS OF CONCERN FOR THE ELDERLY

- *Need fewer calories but must be **Nutrient Dense***
- *Need more B vitamins*
- *Calcium*
- *Protein*
- *Other nutrients.*



# HOW OUR BODY CHANGES AS WE AGE – PERCEPTUAL CHANGES

- **Hearing:** **Diminished or loss of hearing** also affects our nutrition and food experience. The inability to hold a conversation with our eating partner **can limit one's food experience.**
- **Smell:** The **loss of smell** can also have a huge impact on the types of food one chooses to eat as there is a **loss of satisfaction** that can lead to poor food choices.
- **Taste:** One of the most common complaints is in regards to the **diminished taste** in food. As taste buds decrease, so does our taste for salty and sweet — often times making **food taste more bitter or sour.**



# HOW OUR BODY CHANGES AS WE AGE – PHYSIOLOGICAL CHANGES

- **Energy:** Expenditure generally decreases with advancing age because of a decrease in basal metabolic rate and physical activity, thus **decreasing caloric needs.**
- **Function:** Our bodies also begin to experience a **decrease in kidney function, redistribution of body composition and changes in our nervous system.**
- **Frailty** describes a condition in which multiple body systems gradually lose their in-built reserves.



# HOW OUR BODY CHANGES AS WE AGE – OTHER AGING-RELATED CHANGES

- **Dentition:** The makeup of a set of teeth (including how many, their arrangement and their condition). **The loss of teeth and/or ill-fitting dentures can lead to avoidance of hard and sticky foods.**
- **Gastrointestinal Changes:** **Chronic gastritis, constipation, delayed stomach emptying and gas,** may lead to **avoiding healthy foods,** such as fruits and vegetables — the food categories that should be more emphasized rather than eliminated.



# LOSS OF APPETITE – EAT LESS AS WE AGE?

**Margot Gosney**, a professor of geriatric medicine, specialising in nutrition says:

- There's a **shrinkage of the stomach**. And the brain tells the older person **they're full much more quickly**.
- There's also a change in the mechanism in the brain telling us we need food or drink in the first place – **it's really easy for older people to get dehydrated**.



# SENIORS, MALNUTRITION, VITAMIN DEFICIENCIES

- **Malnutrition** is seen in varying degrees in the elderly, along with varying vitamin deficiencies.
- Malnutrition is due to **under nutrition**, **nutrient deficiencies** or imbalances.
- Most physicians do not see frank malnutrition anymore, such as scurvy; but more milder malnutrition symptoms such as **loss of appetite, general malaise or lack of overall interest and wellness.**



# VITAMIN DEFICIENCIES

- Common nutrient deficiencies of dietary origin include inadequate intake of **vitamin A, B, C, D, E, folic acid and niacin**





# HUMAN NUTRITION RESEARCH CENTRE ON AGING, TUFTS UNIVERSITY

- ❖ Foods that score **high in antioxidant analysis** **may protect cells from oxidative damage** (**ORAC** = oxygen radical absorbance capacity)
- ❖ Eating plenty of these **“power”** fruits and vegetables may help to slow the processes associated with aging on both body and brain
- ❖ ORAC value does not necessarily reflect their health benefit – depends on bioavailability

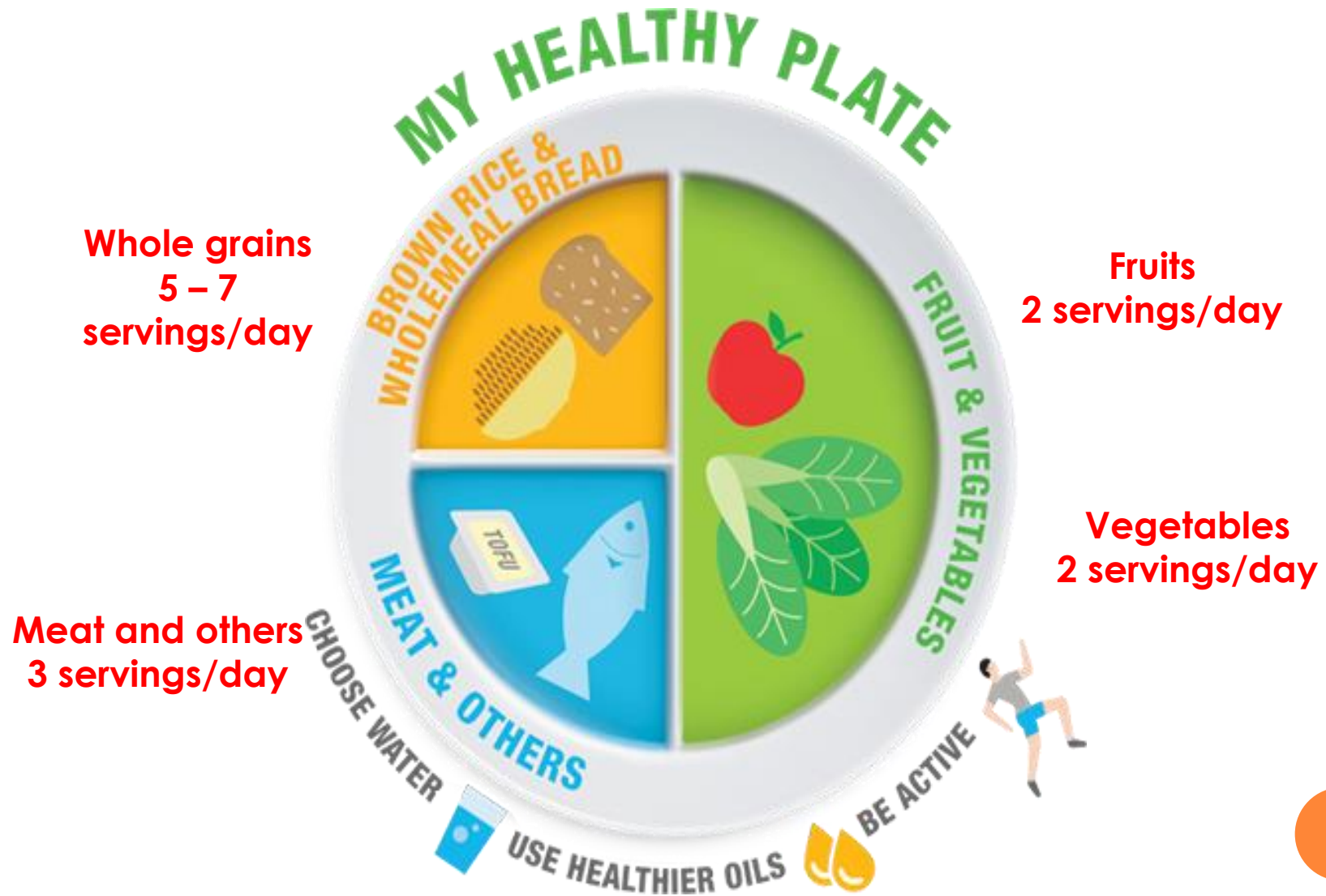


# TOP SCORING **ORAC** FOODS (PER 100G)

FRUITS	VEGETABLES
<ul style="list-style-type: none"><li>• Blueberries</li><li>• Blackberries</li><li>• Strawberries</li><li>• Raspberries</li><li>• Prunes</li><li>• Plums</li><li>• Red grapes</li><li>• Oranges</li><li>• Cherries</li><li>• Kiwi</li><li>• Pink grapefruit</li></ul>	<ul style="list-style-type: none"><li>• Kale</li><li>• Spinach</li><li>• Brussel Sprouts</li><li>• Alfalfa sprouts</li><li>• Beets</li><li>• Red bell pepper</li><li>• Onion</li></ul>



# ACHIEVING REQUIREMENTS FOR ELDERLY



# TUFTS UNIVERSITY NUTRITION SCIENTISTS PROVIDE UPDATED MYPLATE FOR OLDER ADULTS

## MyPlate for Older Adults

### Fruits & Vegetables

Whole fruits and vegetables are rich in important nutrients and fiber. Choose fruits and vegetables with deeply colored flesh. Choose canned varieties that are packed in their own juices or low-sodium.

### Healthy Oils

Liquid vegetable oils and soft margarines provide important fatty acids and some fat-soluble vitamins.

### Herbs & Spices

Use a variety of herbs and spices to enhance flavor of foods and reduce the need to add salt.



### Fluids

Drink plenty of fluids. Fluids can come from water, tea, coffee, soups, and fruits and vegetables.

### Grains

Whole grain and fortified foods are good sources of fiber and B vitamins.

### Dairy

Fat-free and low-fat milk, cheeses and yogurts provide protein, calcium and other important nutrients.

### Protein

Protein rich foods provide many important nutrients. Choose a variety including nuts, beans, fish, lean meat and poultry.



Remember to Stay Active!

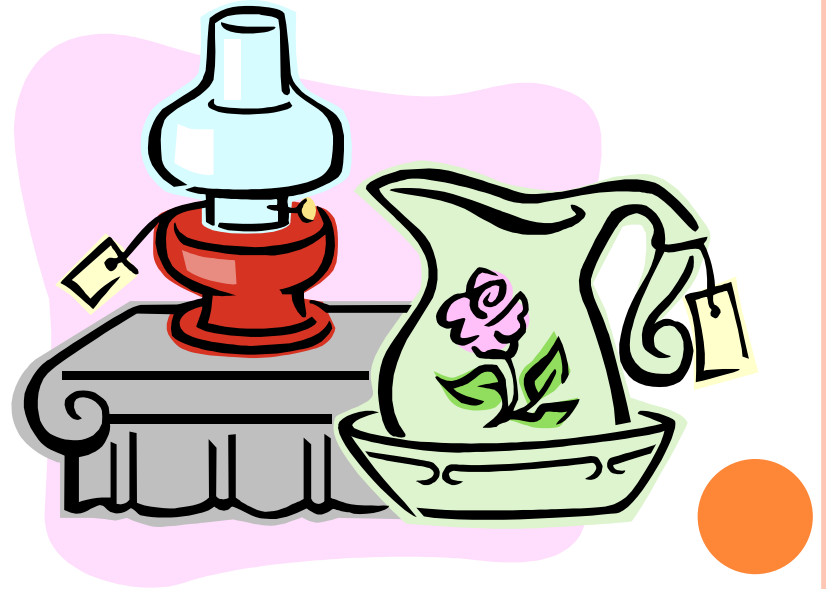
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# NUTRIENTS OF CONCERN IN THE ELDERLY

- ☑ **Calories:** Nutrient Density
- ☑ **Protein**
- ☑ **Calcium**
- ☐ Vitamin D
- ☐ Supplements?
  
- ☑ **Don't forget**
  - Fibre
  - Fluids



# MENU PLANNING FOR OLDER ADULTS

- **Menu Design for Appeal**
- **Presentation of Food**
- **Nutrient Retention**



# FOOD PRESENTATION – MENU DESIGN

It is important when planning menus to make sure that they are balanced correctly for

- ❖ Variety of foods
- ❖ Colour
- ❖ Texture and Shape
- ❖ Consistency
- ❖ Flavour
- ❖ Method of preparation

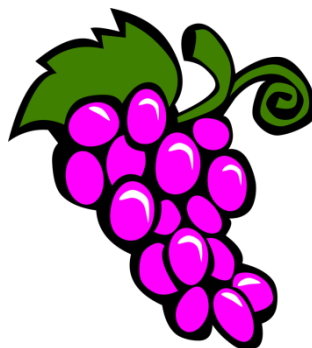
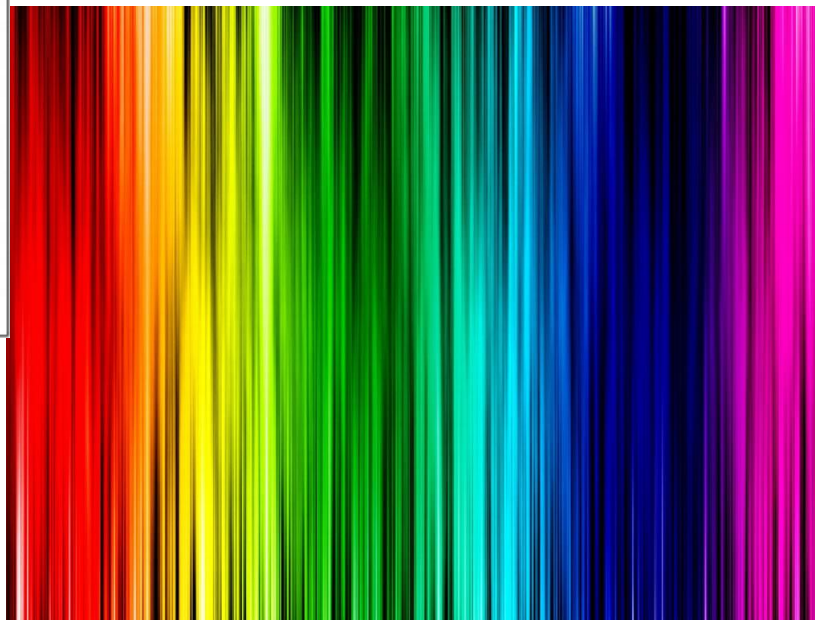
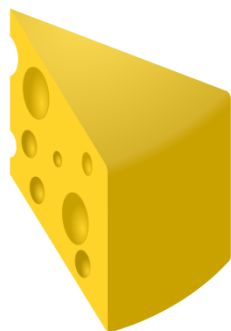


# VARIETY OF FOODS

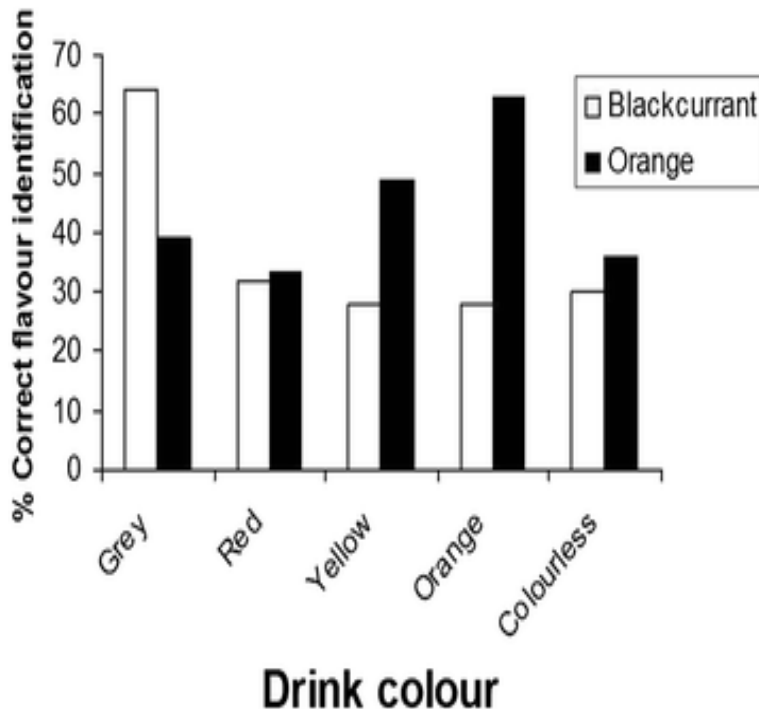




# COLOUR



# COLOUR OF FOOD (ZAMPINI ET AL . 2007)



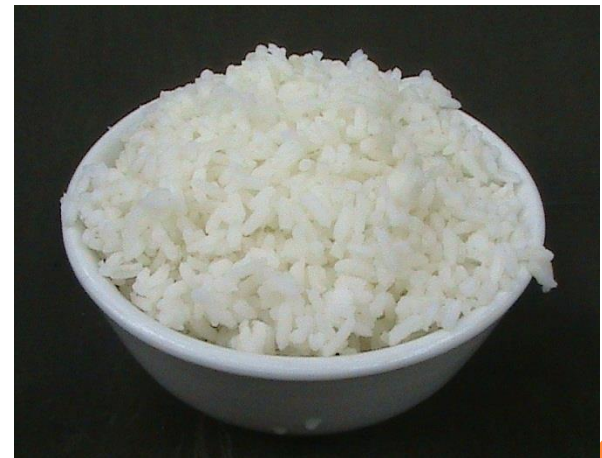
***Influence of colour on people's ability to correctly identify food***

→ **People identify food according to the colour most closely associated to the natural food colour. People confused flavors when a drink did not have the appropriate color**



# TEXTURE AND SHAPE

- Soft
- Hard
- Crispy
- Crunchy
- Chewy
- Smooth, brittle & grainy
- Puree



# CONSISTENCY

- Runny
- Gelatinous
- Pasty
- Thin
- Thick
- Sticky
- Gummy



© 2014 foodhoe's foraging



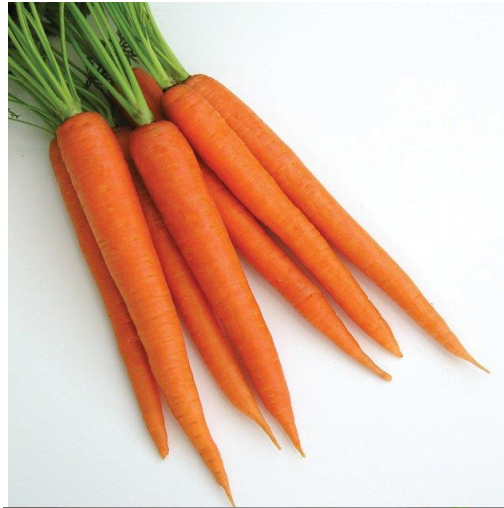
# FOOD TEXTURES

FLUID		
Mildly thick –level 150	Moderately thick – level 400	Extremely thick – level 900
FOOD		
Texture A – Soft Easy to Chew (0.6 cm pieces)	Texture B – Minced and Moist Minimal chewing (0.3 cm pieces)	Texture C – Smooth Pureed No chewing is required



# FLAVOUR

- Sweet
- Sour
- Bitter
- Salty
- Umami

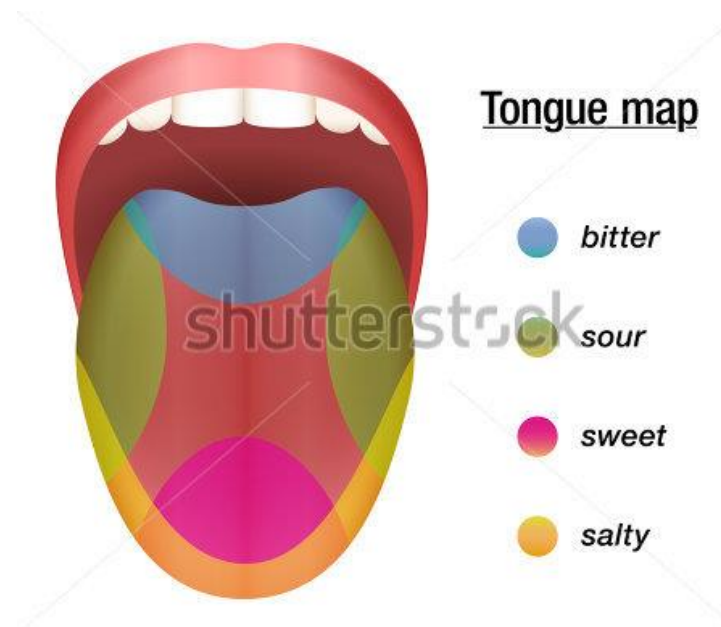


# TASTE-RELATED SENSATIONS IN OLD AGE

T. OGAWA ET AL 02 MARCH 2017

Sense of taste is important. It allows for

- (a) Assessment of nutritional value, safety and quality of foods
- (b) Food enjoyment and quality of life.



# TASTE

- Individuals do not all experience the same taste sensations.
- This variation comes from **genetic differences** as well as **taste pathologies**
- This affects ingestive behavior and, as such, nutrient intake.
- Hispanics and African Americans rated taste sensations higher than non-Hispanic Whites
- Individuals of different ethnicities may require **personalized interventions** that take into account the **different sensory experience** that these individuals may have when consuming foods.





# INVESTIGATING AGE-RELATED CHANGES IN TASTE AND AFFECTS ON SENSORY PERCEPTIONS OF ORAL NUTRITIONAL SUPPLEMENTS

ORLA KENNEDY ET AL

AGE AND AGEING, VOLUME 39, ISSUE 6, 1 NOVEMBER 2010, PAGES 733–738,

- Significant differences were found in both sweetness detection and recognition thresholds ( $P = 0.0001$ ) between young and older adults, with *older adults more likely to incorrectly identify the taste* ( $P = 0.0001$ ).
- Both groups **sweetness intensity** was found to be **correlated with overall product dislike** across all flavour variants tested ( $R = 0.398$ ,  $P = 0.0001$ ).
- **Sweetness appears to be one of many factors contributing to the dislike of ONSs.**
- **Manufacturers are encouraged to reconsider the formulations of these products in a more palatable and acceptable form**



# METHOD OF PREPARATION

- Baking
- Boiling
- Frying
- Steaming
- Grilling
- Roasting



# PRESENTATION

- Eye appeal
- Attractive presentations
- Texture modification



# NUTRIENT RETENTION

- **Nutrients are lost during cooking**
- **Water soluble vitamins (B & C) are lost through heat and time**
- Microwave or steam vegetables
- **Use seasonable fruit and vegetables**
- **Frozen can have more nutrients than fresh**
- Use canned foods to provide variety
- Use proper freezing techniques to preserve nutrients

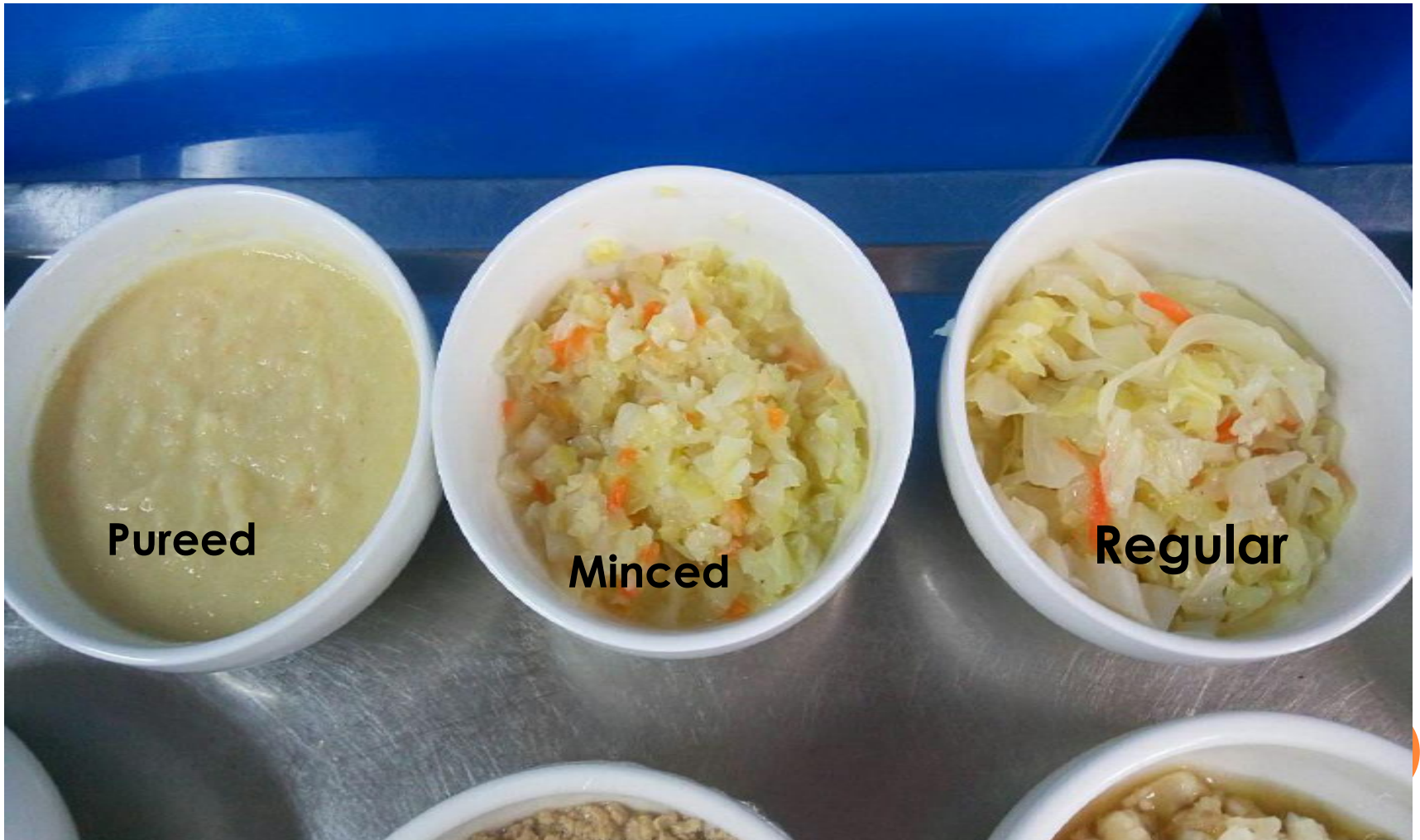


# SOFT DIET OPTIONS

- **Soft Rice**
- **Extra Gravy**
- Porridge
- Blended Porridge
- Soup Noodles
- Mashed Potatoes/ Mashed Pumpkin
- Soft Fruit



# DIFFERENT TEXTURES



# AGEING-FRIENDLY FOOD

Important features of food production for the Elderly group include:

- ❖ **Energy-dense food**
- ❖ **Functional food (fortified with protein, calcium, Vitamin D, B12)**
- ❖ Chewable and swallowing adjusted food such as **puree and mashable forms**
- ❖ **Smaller portions and ready-to-bite meals**
- ❖ Practical simple packaging which is easy to open and reseal
- ❖ **Larger print labels, simple to read, and clearly labelled with nutritional information**



# FOOD PRODUCTS FOR THE ELDERLY

- High Protein
- High Protein and High Carbohydrates
- Functional Nutrition





# HIGH PROTEIN

Food items which aim to provide a source of protein.

- Beverages – Soy based
- Soups – Miso or Chicken based
- Mains – Savoury, curry based
- Snacks – Dim Sum/ Pau/ Red Bean/ Tau Suan
- Desserts e.g. Peanut Butter Kueh



# HIGH PROTEIN AND HIGH CARBOHYDRATES

The purpose of these reconstituted preparations is to provide the protein and calories needed to **maintain muscle tone and shape.**

- Cold and hot beverages – Milo/ Malt/ Chocolate
- Smoothies
- Creams
- Soups
- Cereal preparations



# FUNCTIONAL NUTRITION

These products aim to achieve a **functional objective**. They make the link between nutrition and health while maintaining a taste appeal.

**Some examples:**

- Fibre
- **Calcium-rich**
- **Extra protein boost** - **EAA** (with ~2.5 g leucine) and HMB ( $\beta$ -hydroxy  $\beta$ -methylbutyric acid) may improve muscle outcomes.
- Texture modified meals
- Gelified water/ beverages



# LEUCINE RICH FOOD

- **Cheese (Parmesan) 3452mg/100g**
- **Soybeans (Roasted) 3223mg/100g**
- **Beef (Sirloin, grilled) 3165mg/100g**
- **Chicken (Breast, cooked) 2652mg/100g**
- **Pork (Sirloin, cooked) 2560mg/100g**
- **Seeds & Nuts (Pumpkin Seeds) 2419mg/100g**
- **Fish (Tuna, cooked) 2293mg/100g**
- **Seafood (Octopus, cooked) 2099mg/100g**
- **Peanuts 1812mg/100g**
- **Beans (White, cooked) 776mg/100g**



# HMB (B-HYDROXY B-METHYLBUTYRIC ACID) RICH FOODS

- **HMB** is a metabolite of the branched-chain amino acid **leucine**.
- Our body can produce **0.3 to 1g HMB/day** in muscle tissue.
- Found in both plants and animals and is particularly concentrated in alfalfa, corn silage, grapefruit and catfish.
- Although HMB is found in higher concentrations in these foods, the amounts are still far too small to get a beneficial amount.



"The doctor of the future will give no medicine, but will interest his or her patients in the care of the human frame, **proper diet**, and in the cause and prevention of disease."

- *Thomas Edison*



# THE BEST 6 DOCTORS

Sunshine

**Water**

Rest

Air

Exercise

**Diet**

