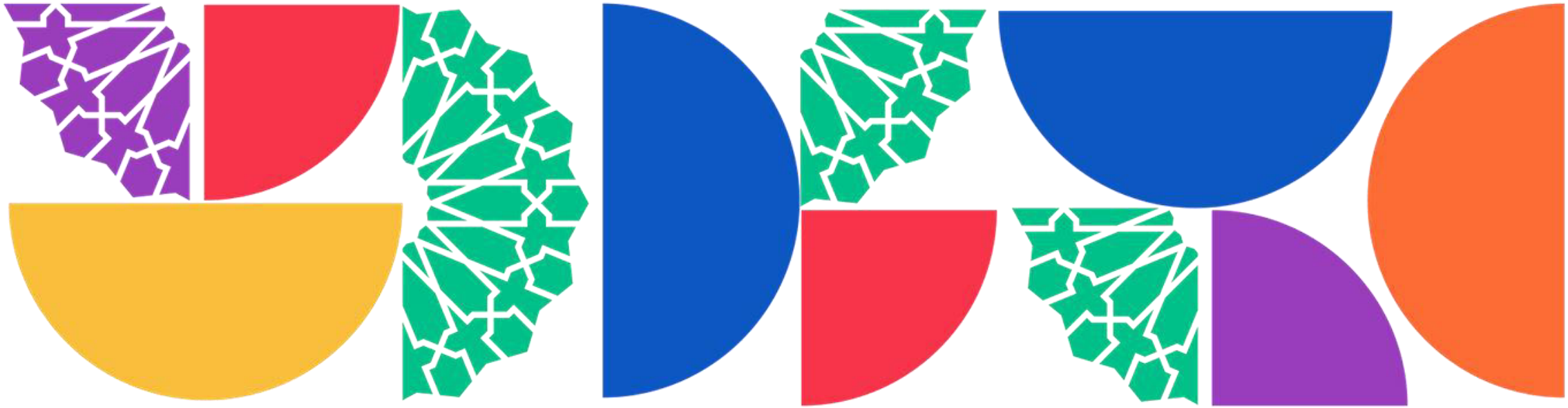
# Health Awareness and Nutrition

## Hypertension and Cardiovascular Diseases

Department of Clinical Nutrition and Dietetics
College of Health Sciences



# Hypertension and Cardiovascular Diseases

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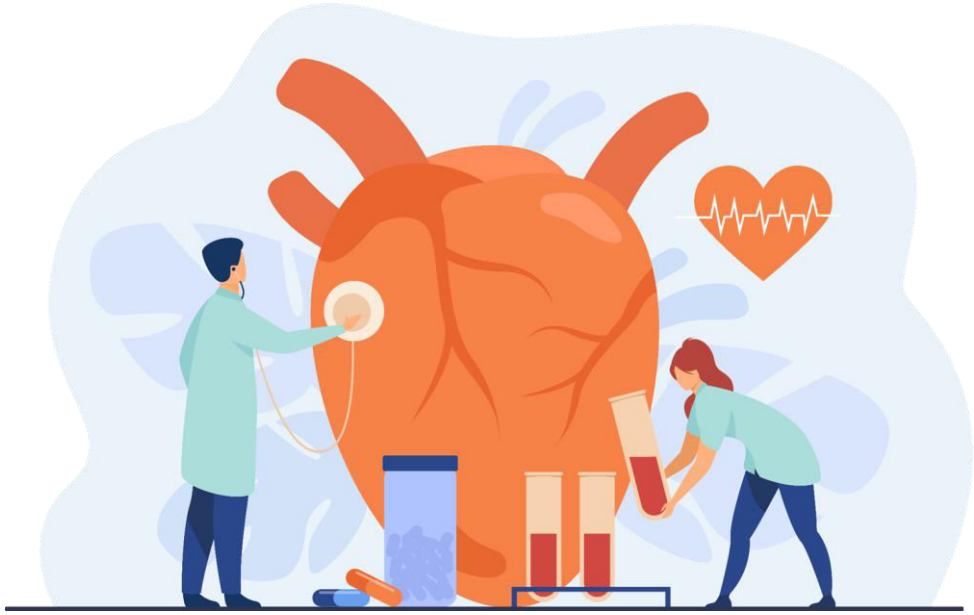
Cardiovascular disease (CVD) remains **the number one killer**, claiming 18.6 million lives globally every year.

**33% of all deaths** are from CVD.

**Risk factors** such as diet, smoking, and air pollution, can have a significant impact on people's cardiovascular health.



# Hypertension

- **Nearly 1 in 2 adults have high blood pressure.**
- Without treatment, high blood pressure can **damage the arteries, heart, kidneys,** and **other organs**.
- It can lead to **heart attacks, strokes,** and **kidney failure**.
- It can also cause **vision** and **memory loss**.

# Hypertension

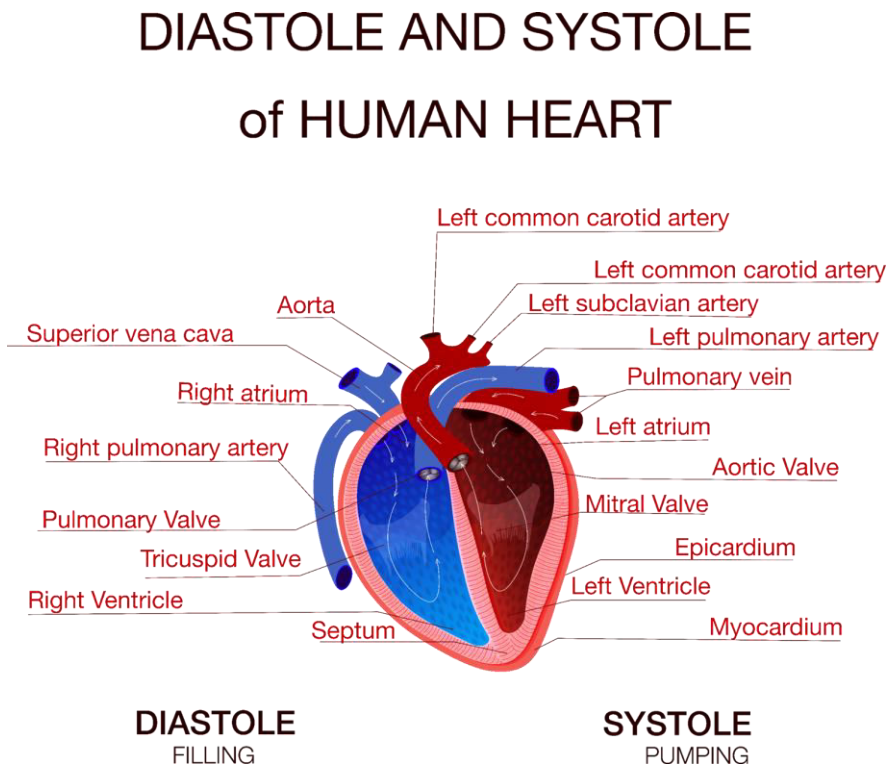
It is defined as **sustained elevated arterial blood pressure** (continued increased blood pressure in the arteries).

**Instrument used**:

**Sphygmomanometer** – it measures:

- **Systolic** Blood Pressure (SBP)
- **Diastolic** Blood Pressure (DBP)

# Hypertension




**Systolic**: The phase of blood circulation in which the heart's pumping chambers (ventricles) are actively pumping blood.

**Diastolic**: The phase of blood circulation in which the heart's pumping chambers (ventricles) are being filled with blood.

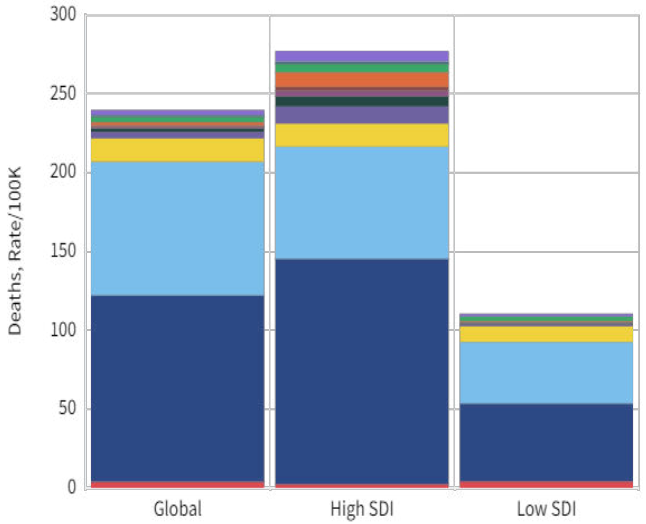
**Normal BP**: Less than 120/80 mm Hg.

High blood pressure increases the risk of **heart disease** and **kidney disease**.

## CAUSES

### Cardiovascular diseases breakdown in 2019

All Ages, Both Sexes

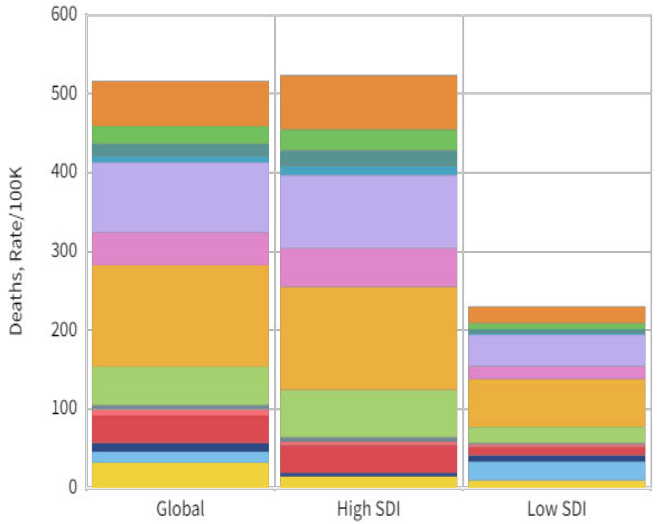



- Alcoholic cardiomyopathy
- Aortic aneurysm
- Atrial fibrillation and flutter
- Endocarditis
- Hypertensive heart disease
- Ischemic heart disease
- Myocarditis
- Non-rheumatic valvular heart disease
- Other cardiomyopathy
- Other cardiovascular and circulatory diseases
- Peripheral artery disease
- Rheumatic heart disease
- Stroke

## RISKS

### Cardiovascular diseases risks in 2019

All Ages, Both Sexes




- Alcohol use
- Ambient particulate matter pollution
- Dietary risks
- High LDL cholesterol
- High body-mass index
- High fasting plasma glucose
- High systolic blood pressure
- Household air pollution from solid fuels
- Impaired kidney function
- Lead exposure
- Low physical activity
- Non-optimal temperature
- Secondhand smoke
- Smoking



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# Classification of Blood Pressure

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| BLOOD PRESSURE CATEGORY | SYSTOLIC mm Hg (upper number) | | DIASTOLIC mm Hg (lower number) |
|---|---|---|---|
| NORMAL | LESS THAN 120 | and | LESS THAN 80 |
| ELEVATED | 120 – 129 | and | LESS THAN 80 |
| HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1 | 130 – 139 | or | 80 – 89 |
| HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2 | 140 OR HIGHER | or | 90 OR HIGHER |
| HYPERTENSIVE CRISIS (consult your doctor immediately) | HIGHER THAN 180 | and/or | HIGHER THAN 120 |

# Types of Hypertension

**Primary/essential** (cause not known) in the majority of cases of hypertension (about 95%).

**Secondary to other diseases**:

- Kidney diseases
- Hormonal diseases
- Oral contraceptives in women

# Consequences of Hypertension

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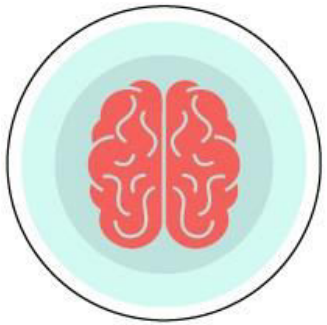
If left uncontrolled, high blood pressure can increase a person's risk for **heart disease**, **stroke**, **heart failure**, **kidney disease**, **pregnancy complications**, and **cognitive decline** later in life.



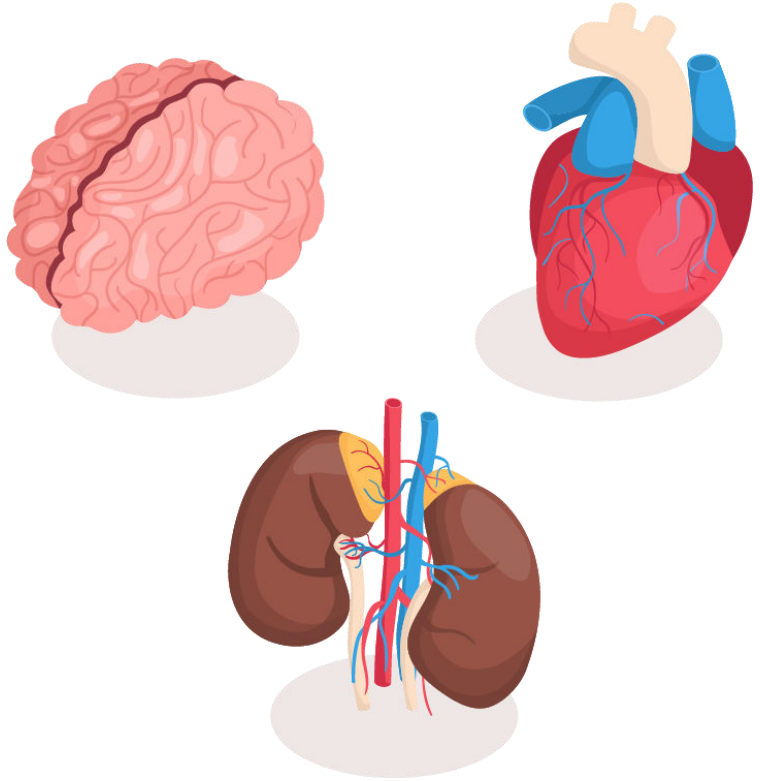



**Has no warning signs or symptoms.**

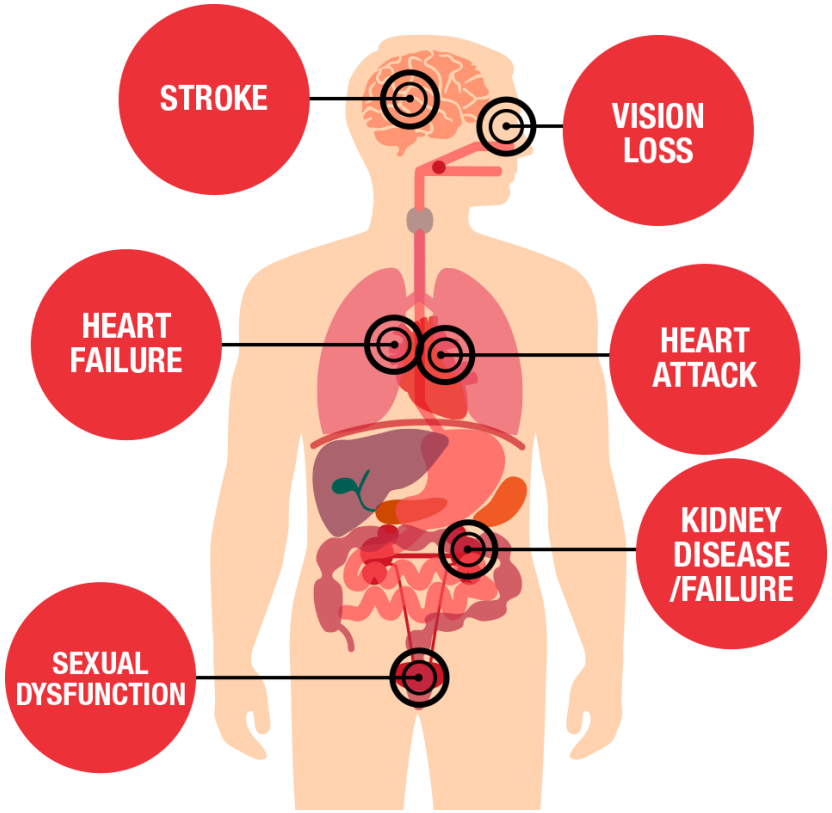
# Untreated Hypertension

**Target organs that are damaged**:

**Heart** – heart disease
**Brain** - cerebrovascular disease
**Kidneys** - renal disease
**Arteries** - large vessel disease



# High Blood Pressure and CVD




Makes the heart **work too hard**.

Increases the pressure on the walls of arteries and can cause **hardening of arteries**.

If left untreated, can cause **heart failure**, **kidney disease**, and **blindness**.

Increases risk for **heart disease** and **stroke**.

# Risk Factors

**Non-Modifiable**:

Age

Race/ethnicity

Gender

Family history

**Modifiable**:

Overweight

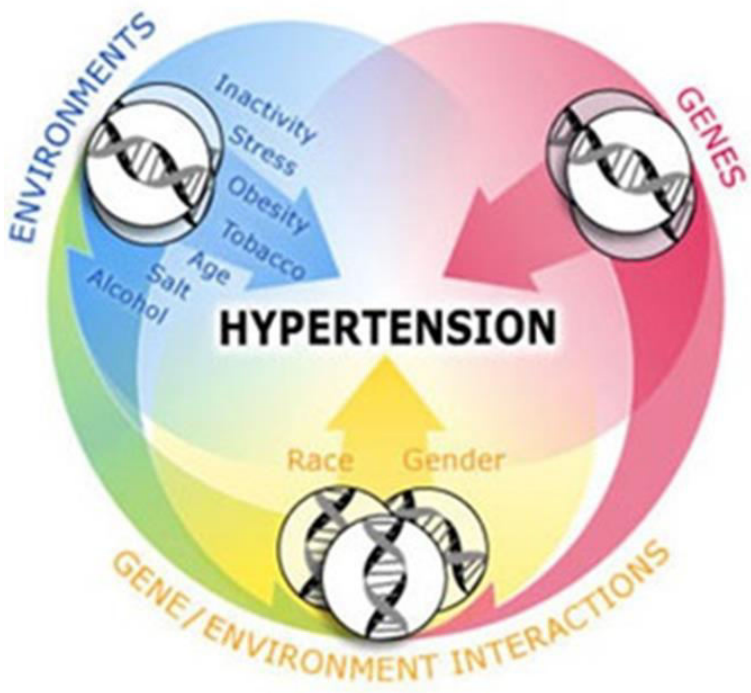
Abnormal lipid metabolism

Smoking

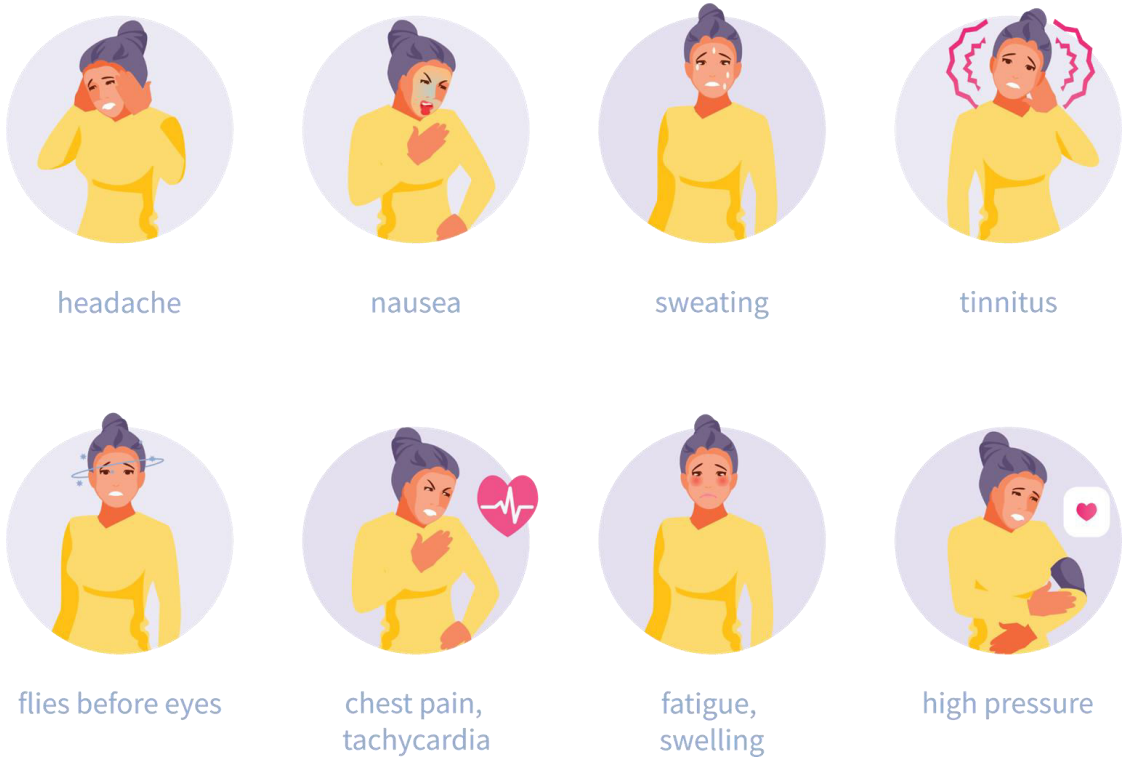
Physical inactivity

Unhealthy diet

Excessive alcohol intake



# Clinical Symptoms




Headache, edema (swelling in extremities) and proteinuria (presence of protein in urine).

**Other symptoms**:

- Dizziness, Impaired vision
- Failing memory, shortness of breath
- Pain, gastrointestinal disturbances

# Dietary Management

**Objectives**:

- To achieve and maintain desirable body weight
- To **reduce sodium** intake
- To **increase potassium** intake
- To maintain adequate nutrition

# Diet and Hypertension

**Non-pharmacological way of treating hypertension.**

**DASH Diet (Dietary Approaches to Stop Hypertension)**:

- High in whole grains, fruits, vegetables, and low-fat dairy
- Adequate Calcium, Potassium, Magnesium
- Low in red meat, sweets and sugar beverages
- Low in saturated and trans fat, cholesterol

# Eat Less Sodium

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Reduce sodium to **less than 2400 milligrams** per day.

Most of the sodium in our diet comes from **salt**, or sodium chloride.

Salt is about **40% sodium**.

# Eat Less Sodium


Look for "**low sodium**" or "**salt free**" – watch "reduced sodium."

Choose more foods with **Daily Value less than 10%**.

# Ways To Cut Sodium

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**Remove salt shaker**.

Add **little if any salt** to cooking.

Buy more fresh or plain frozen "**no added salt**" veggies.

Use more **herbs** and **spices**.

# Sodium Restricted Diets

**Sodium (Na) Restricted Diets**:

The success of **controlling hypertension** lies in an appropriate intake of sodium level.

**Levels of Na restriction per day are**:

- Mild sodium restriction: 2000-3000 mg
- Extreme sodium restriction: 200-300 mg

**Sodium** (Na) = **40% of salt** (NaCl) molecule

# Physical Activity

**Benefits of Exercise**:

- Lower blood pressure
- Weight control
- Increased insulin sensitivity
- Improved lipid levels
- Improved blood glucose control
- Reduced risk of CVD
- Prevent/delay onset of type 2 diabetes

# Omega-3 Fatty Acid


Omega-3 fatty acid, which is found **mainly in fish**, may **help lower blood pressure and triglycerides,** lowering the **risk of heart disease.**

It’s best to **get omega-3s from food**, so you should aim to eat fatty fish, like salmon, mackerel, and trout, at least twice a week.

# Risk Factor: Smoking

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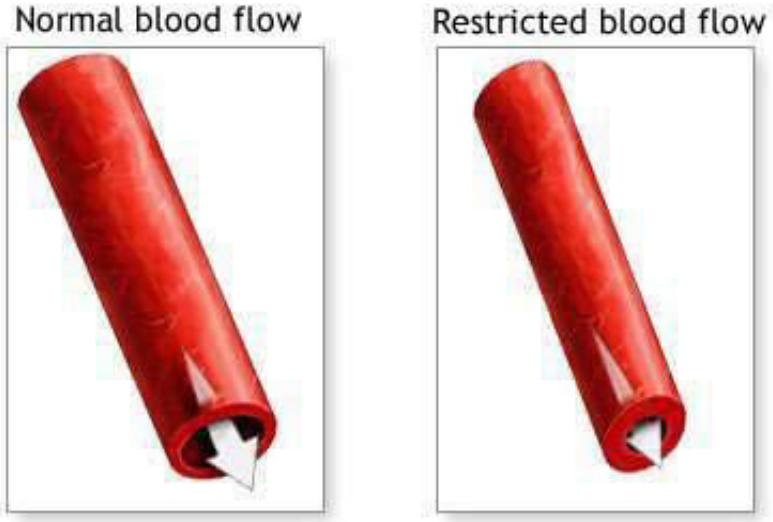
- Causes plaque to form in blood vessels.
- Reduces HDL (“good”) cholesterol.
- Increases blood pressure.
- Increases heart arrhythmias.


**Risk decreases after quitting by 1/3 in 2 years.**

**Equal to a non-smoker in 10-14 years.**

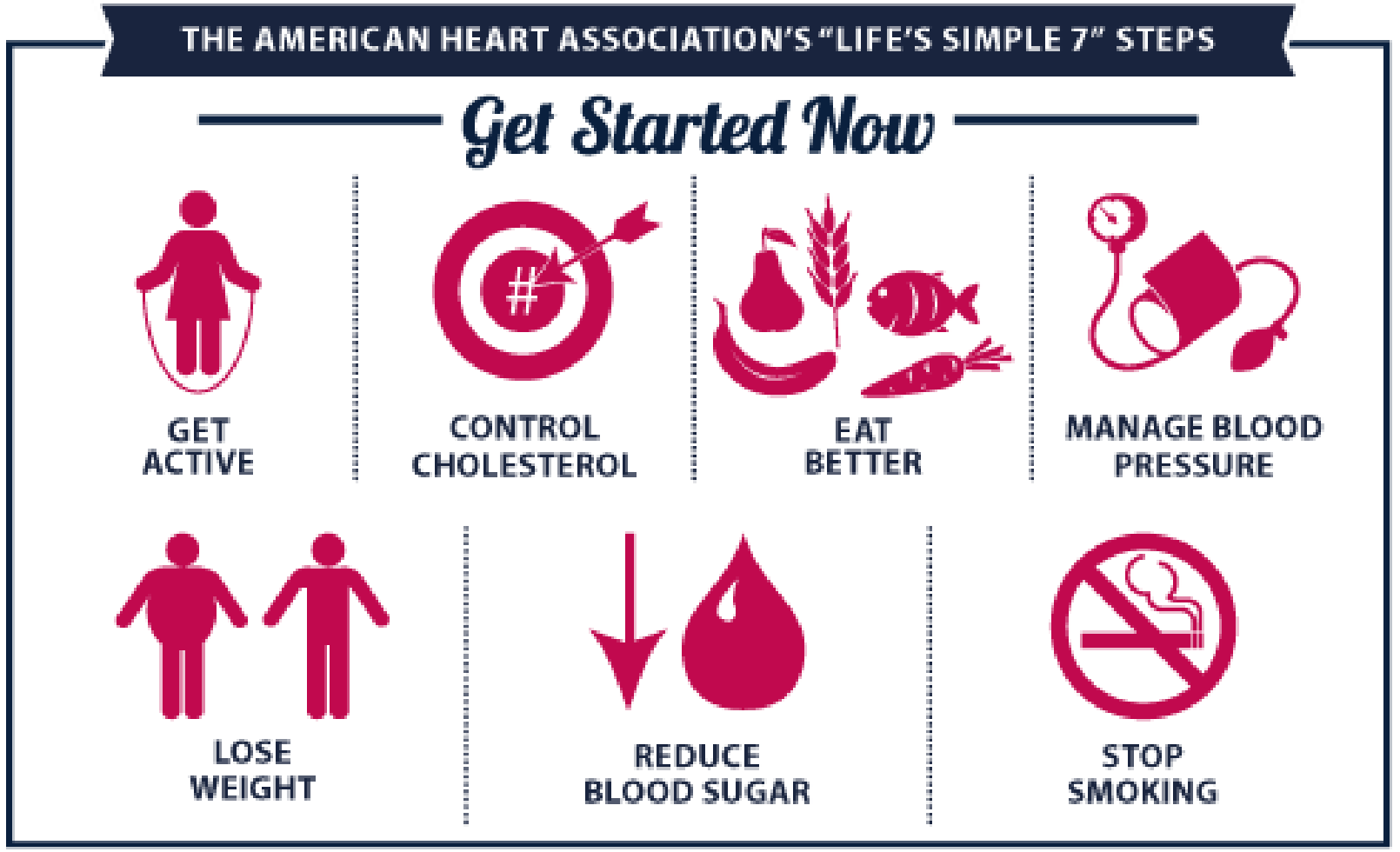
# Smoking



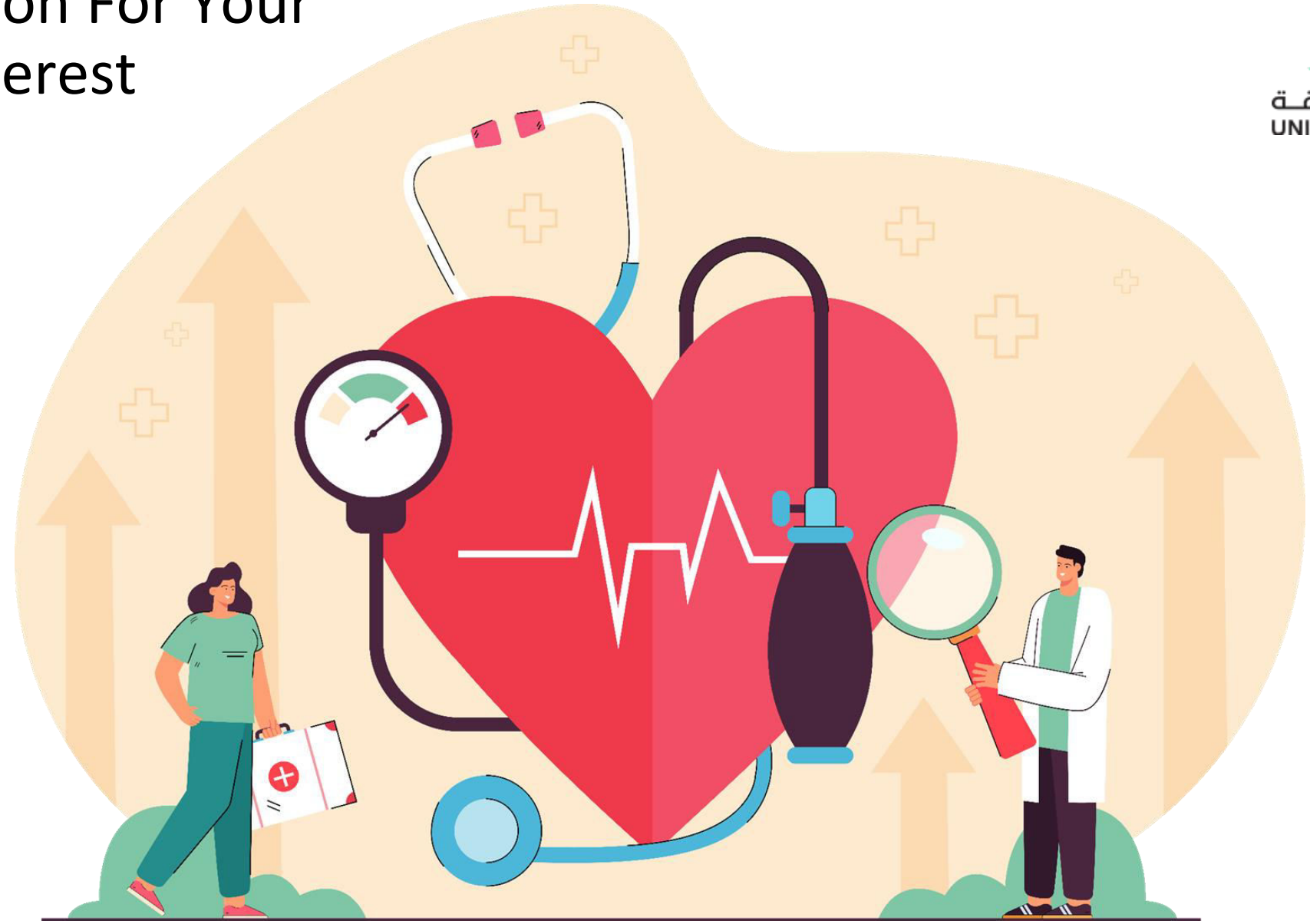

**Injures blood vessel walls.**

Speeds up the process of **hardening of the arteries**.

# Life's Simple 7



# Information For Your Interest



# Sodium Restriction For Hypertension

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**Mild sodium restriction (2000-3000 mg)**

**Foods allowed**:
Natural fresh foods, processed/preserved foods in which salt is not used as a preservative or flavoring agent

**Foods omitted**:
Table salt (use salt lightly in cooking)
Salt preserved foods: salted/smoked meat and fish
Highly salted foods: crackers, chips & salted nuts, popcorns and snacks
Foods with (Na) preservative: pickles, dips and sauces of tomato, chilli, garlic, soy
Flavored enhancers: Monosodium Glutamate (MSG)
Processed cheese and salted butter

# Sodium Restriction For Hypertension

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**Moderate sodium restriction (1000-1500 mg)**

**Foods allowed:**
Above + Limit use of high Na vegetables & baked products
Moderate use of meat & milk

**Foods omitted:**
No salt in cooking
Canned foods in brine/canned vegetable juices
> 1 serving of these vegetables per day: carrots, beetroot and greens, mustard greens, spinach, turnips
Bread, bread roll, crackers
Ready-to-eat breakfast cereals: cornflakes, oats
Shellfish, shrimp, crab, lobster
Mayonnaise or other salad dressings
Baking powder/soda or their products

# Sodium Restriction For Hypertension

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**Severe sodium restriction (500-700 mg)**

**Foods omitted**:
Above +
Limit use of meat/chicken (80g), eggs (1) and milk (2 cups)

*Careful selection of foods in measured amounts is important.*

# Sodium Restriction For Hypertension

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**Extreme sodium restriction (200-300 mg)**

**Foods omitted**:
Above +
Limit use of milk, milk/chicken (40g/day), eggs (3/week)

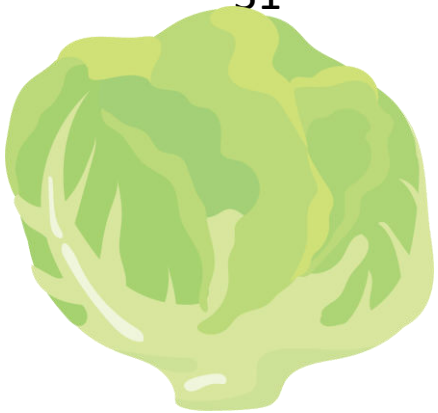
*Careful selection of foods in measured amounts is important.*

# Sodium & Potassium Content (mg/100g) of Commonly Used Foods

| Foods | Sodium (mg/100g) | Potassium (mg/100g) |
|---|---|---|
| **Cereals** | | |
| Maize (dry) | | 15.9 |
| Maize (tender) | | 51.7 |
| Rice flakes | | 10.9 |
| Wheat flour (whole) | 20.0 | |
| Wheat flour (refined) | 9.3 | |
| Wheat, semolina | 21.0 | |
| Wheat, vermicelli | 7.9 | |

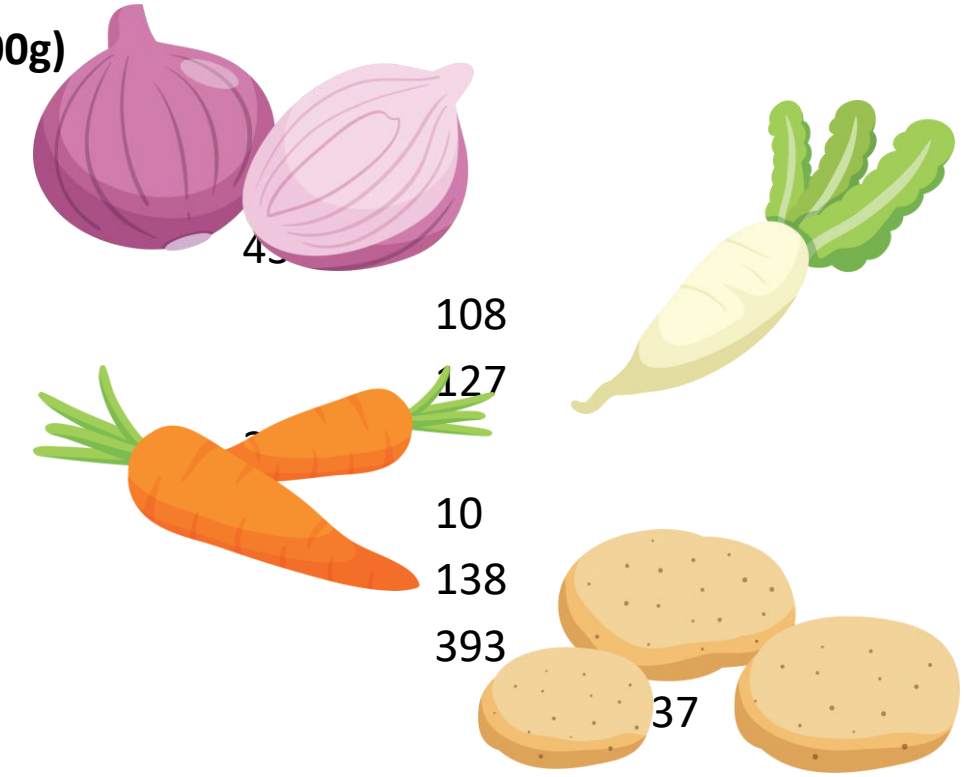

# Sodium & Potassium Content (mg/100g) of Commonly Used Foods

| Foods | Sodium (mg/100g) | Potassium (mg/100g) |
|---|---|---|
| **Green Leafy Vegetables** | | |
| Coriander leaves | 58.3 | 256 |
| Fenugreek leaves | 76.1 | 31 |
| Lettuce | 58.0 | |
| Spinach | 58.5 | |



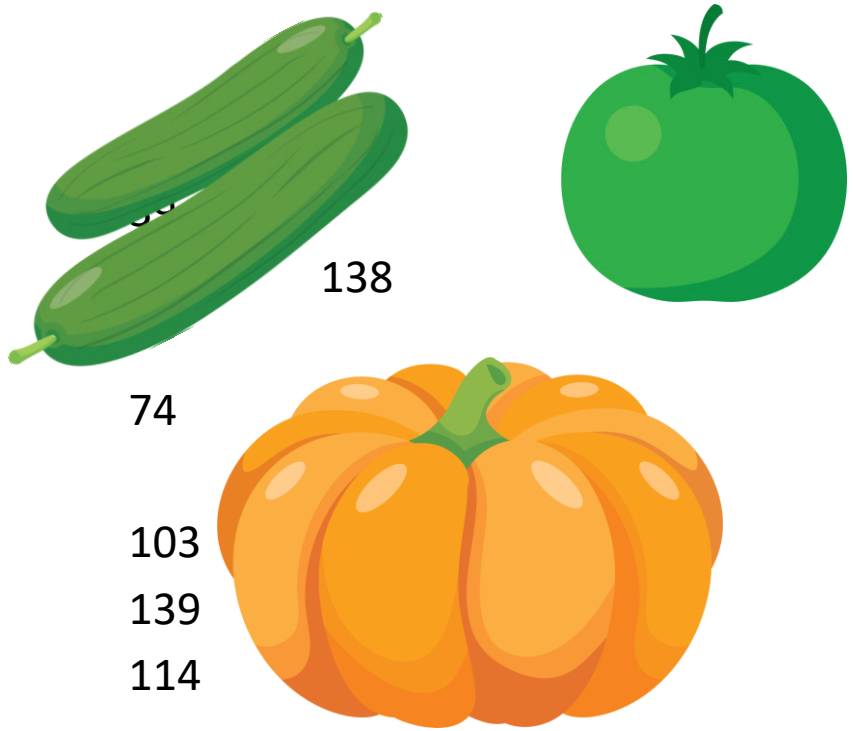
# Sodium & Potassium Content (mg/100g) of Commonly Used Foods

| Foods | Sodium (mg/100g) | Potassium (mg/100g) |
|---|---|---|
| **Roots and Tubers** | | |
| Beetroot | 59.8 | 4 |
| Carrot | 35.6 | 108 |
| Onion (big) | 4 | 127 |
| Potato | 11 | |
| Radish (pink) | 63.5 | 10 |
| Radish (white) | 33 | 138 |
| Sweet potato | 9 | 393 |
| Yam | 9 | 37 |



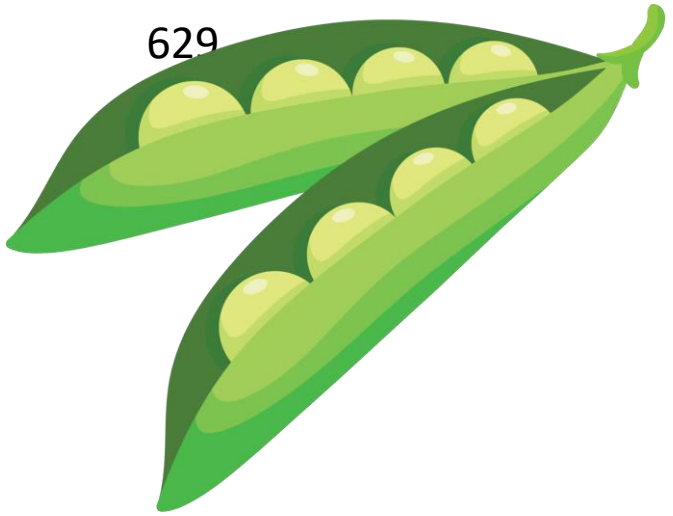
# Sodium & Potassium Content (mg/100g) of Commonly Used Foods

| Foods | Sodium (mg/100g) | Potassium (mg/100g) |
|---|---|---|
| **Other Vegetables** | | |
| Broad beans | 43.5 | |
| Cauliflower | 53.0 | 138 |
| Cucumber | 10.2 | 50 |
| Field beans | 55.4 | 74 |
| French beans | 4.3 | |
| Ladies finger | 6.9 | 103 |
| Pumpkin | 5.6 | 139 |
| Tomato, green | 45.8 | 114 |



# Sodium & Potassium Content (mg/100g) of Commonly Used Foods

| Foods | Sodium (mg/100g) | Potassium (mg/100g) |
|---|---|---|
| **Pulses** | | |
| Lentil, whole | 40.1 | 629 |
| Peas, green | 7.8 | |
| Red gram dal | 28.5 | |



# Sodium & Potassium Content (mg/100g) of Commonly Used Foods

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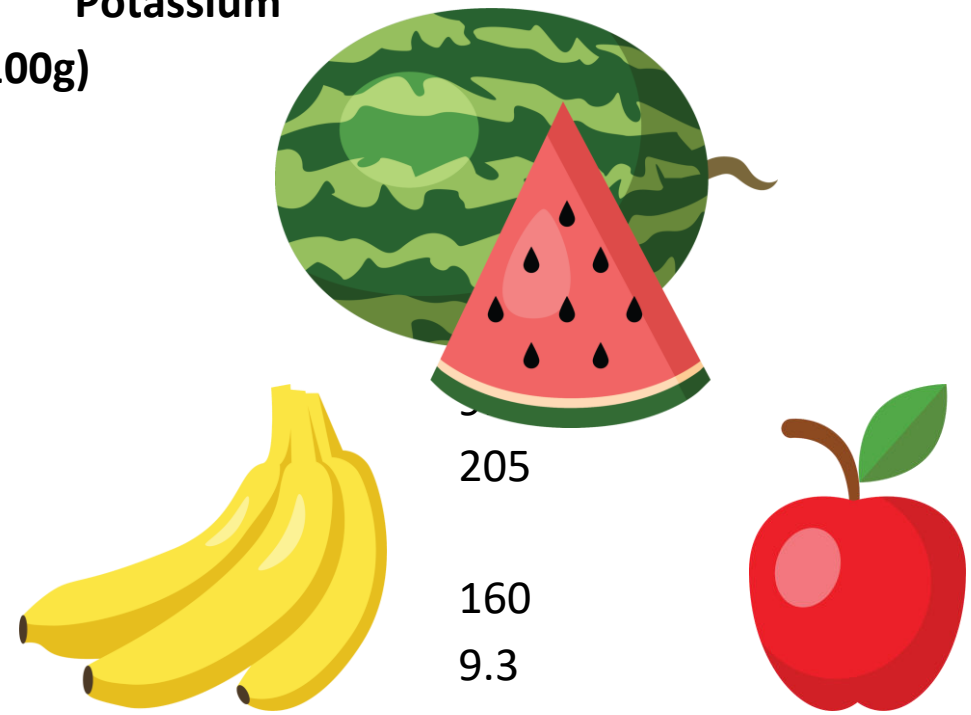
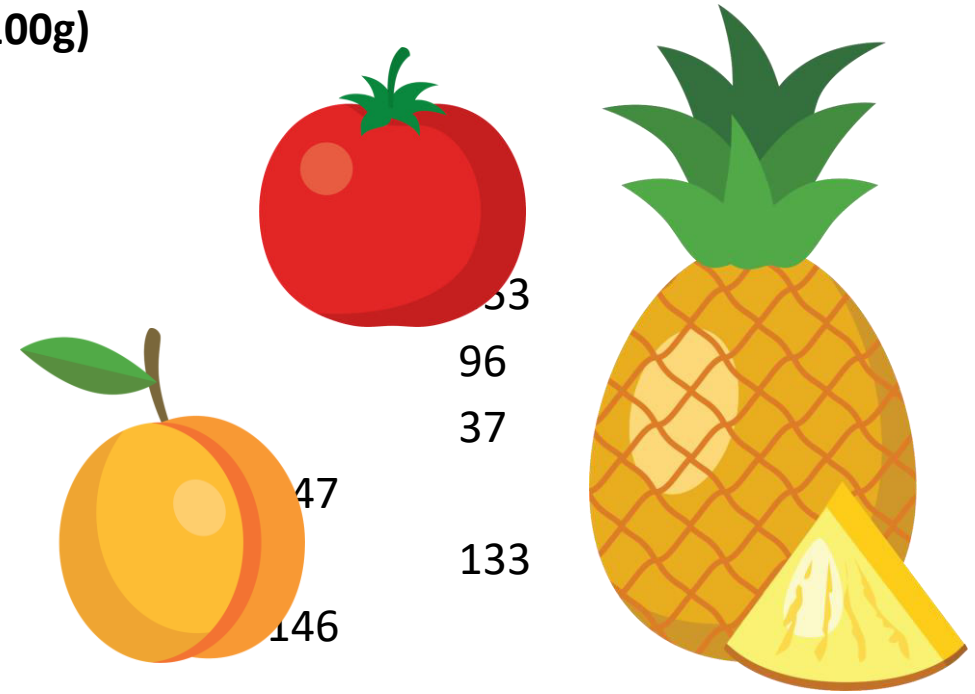
| Foods | Sodium (mg/100g) | Potassium (mg/100g) |
|---|---|---|
| **Fruits** | | |
| Apple | 28 | |
| Banana | 36.6 | |
| Guava | 5.5 | |
| Mango | 26 | 205 |
| Melon, musk | 104.6 | |
| Melon, water | 27.3 | 160 |
| Orange | 4.5 | 9.3 |



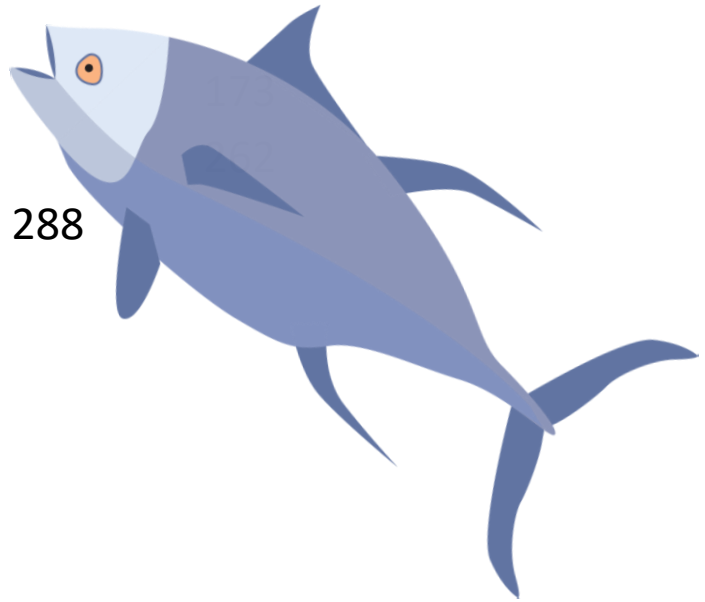
# Sodium & Potassium Content (mg/100g) of Commonly Used Foods

| Foods | Sodium (mg/100g) | Potassium (mg/100g) |
|---|---|---|
| **Fruits** | | |
| Papaya | 6 | |
| Peaches | 2 | 53 |
| Pears | 6.1 | 96 |
| Pineapple | 34.7 | 37 |
| Plums | 0.8 | 47 |
| Pomegranate | 0.9 | 133 |
| Tomato, ripe | 12.9 | 146 |



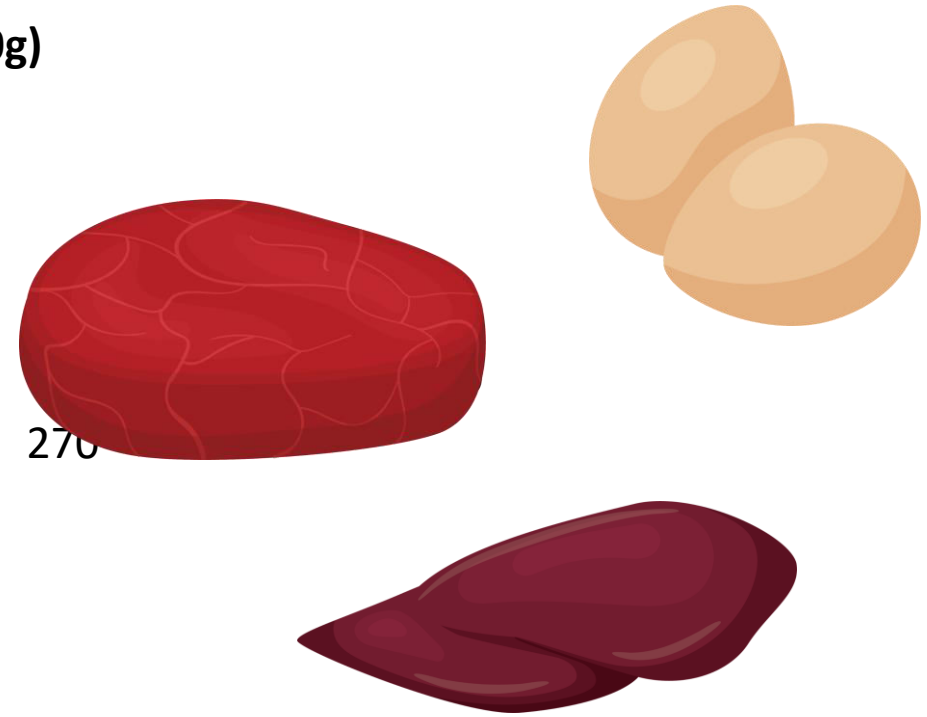
# Sodium & Potassium Content (mg/100g) of Commonly Used Foods

| Foods | Sodium (mg/100g) | Potassium (mg/100g) |
|---|---|---|
| **Fish and Other Sea Foods** | | |
| Bhekti fish | 66 | |
| Prawn | 66 | |
| Rohu | 101 | 288 |



# Sodium & Potassium Content (mg/100g) of Commonly Used Foods

| Foods | Sodium (mg/100g) | Potassium (mg/100g) |
|---|---|---|
| **Meat and Poultry** | | |
| Beef muscle | 52 | |
| Egg | | 50 |
| Liver | | 73 |
| Mutton, muscle | 33 | 270 |



# Sodium & Potassium Content (mg/100g) of Commonly Used Foods

| Foods | Sodium (mg/100g) | Potassium (mg/100g) |
|---|---|---|
| **Milk and Other Products** | | |
| Milk, buffalo | 19 | |
| Milk, cow | 73 | 140 |
| Milk, goat | 11 | 110 |
| Curd, cow | 32 | 130 |
| Cottage cheese | 400 | |