MEDICAL NUTRITION THERAPY FOR HYPERTENSION

PROF DR NAJLAA FAWZI

HYPERTENSION

Blood pressure can be unhealthy even if it stays only slightly above the normal level of less than 120/80 mmHg.
The more blood pressure rises above normal, the greater the health risk.

In those with elevated BP or stage 1 hypertension, lifestyle changes may control the BP adequately.
In those with either higher BP or additional risk (e.g., diabetes or chronic kidney disease), drug therapies should first be used to more quickly and effectively control the BP.
Once BP is well controlled, lifestyle changes should be strongly advised. If these are successfully achieved, reduction of medications may be possible.

Lifestyle Modifications for Prevention of Hypertension

- Lose weight if overweight
- Limit alcohol
- Increase physical activity
- Decrease sodium intake
- Keep potassium intake at adequate levels
- Take in adequate amounts of calcium and magnesium
- Decrease intake of saturated fat and cholesterol
- Stop smoking


DASH DIET
FOR
HYPERTENSION

Studies findings showed that blood pressures were reduced with an eating plan that is low in saturated fat, cholesterol, and total fat and that emphasizes fruits, vegetables, and fat-free or low-fat milk and milk products.
This eating plan—known as the DASH eating plan—also includes whole grain products, fish, poultry, and nuts.

The DASH diet is a lifelong approach to healthy eating that's designed to help treat or prevent high blood pressure (hypertension).

DASH diet encourages you to reduce the sodium in your diet and eat a variety of foods rich in nutrients that help lower blood pressure, such as potassium, calcium and magnesium.

DASH is a plan rich in fruits, vegetables, and low-fat or nonfat dairy. It emphasizes whole grains and contains less refined grains compared with a typical diet.

The DASH eating plan also has other benefits, such as lowering LDL cholesterol, which, along with lowering blood pressure, can reduce risk for getting heart disease.

Numerous studies have shown that the DASH diet reduces the risk of many diseases, including some kinds of cancer, stroke, heart disease, heart failure, kidney stones, and diabetes. It has been proven to be an effective way to lose weight and become healthier at the same time.

DASH eating plan

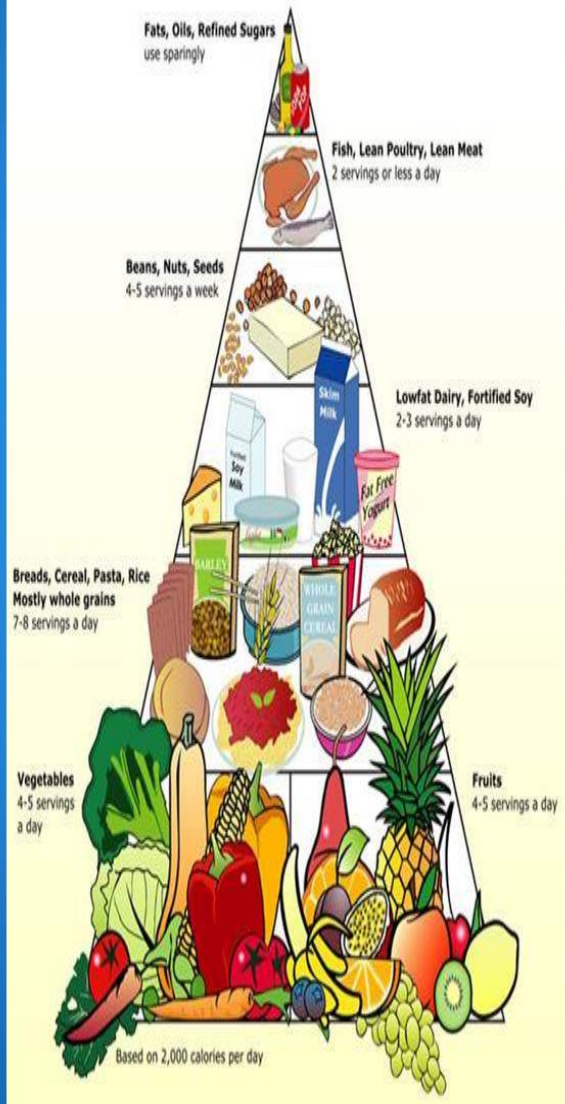
Dietary Approaches to Stop Hypertension

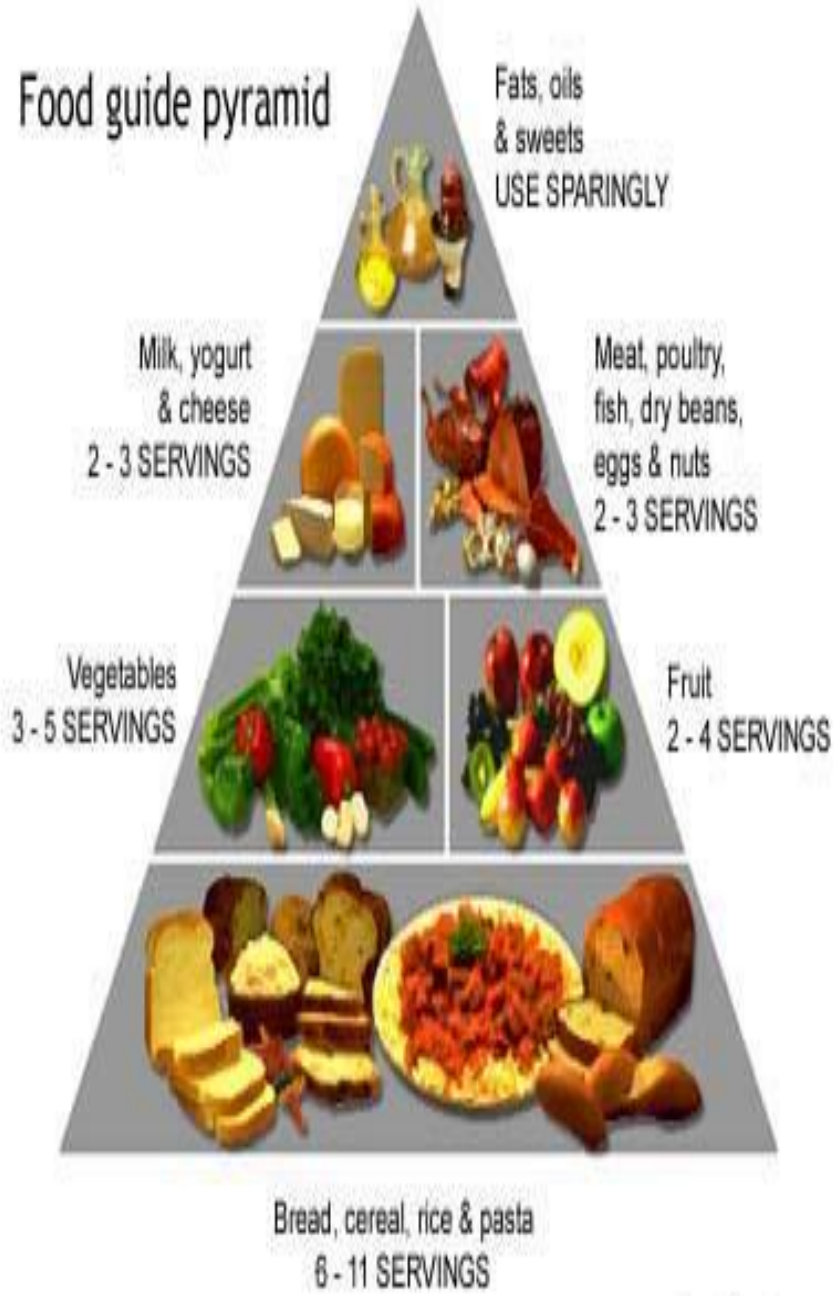
- **Differences from the food pyramid:**
- **an increase of 1 daily serving of vegetables.**
- **and increase of 1-2 servings of fruit.**
- **inclusion of 4-5 servings of nuts ,seeds, and beans**

Also recommends increasing the intake of calcium, magnesium and potassium which have been found to reduce blood pressure.

DASH PYRAMID

Dietary Approaches to Stop Hypertension





A.D.A.M.

- **Standard DASH diet.** You can consume up to 2,300 milligrams (mg) of sodium a day.
- **Lower sodium DASH diet.** You can consume up to 1,500 mg of sodium a day.

DASH diet: What to eat

Both versions of the DASH diet include lots of whole grains, fruits, vegetables and low-fat dairy products. The DASH diet also includes some fish, poultry and legumes, and encourages a small amount of nuts and seeds a few times a week.

You can eat red meat, sweets and fats in small amounts. The DASH diet is low in saturated fat, cholesterol and total fat.

Steps to Manage High Blood Pressure

- **Weight management**

  —If over 115% of ideal body weight, exercise and hypo caloric diet estimate 25 kcal/kg minus 500 to 1000kcal/day

How to Lower Calories on the DASH Eating Plan

The DASH eating plan can be adopted to promote weight loss. It is rich in lower-calorie foods, such as fruits and vegetables. Can make it lower in calories by replacing higher calorie foods such as sweets with more fruits and vegetables.

Sugar

High sugar intake potentiates the effect of sodium chloride's (salt) influence on blood pressure.

Excess sugar consumption may result in a high insulin response which may decrease the release of sodium out of the body and increase blood pressure .

Therefore, a high sugar intake exerts increase sodium retention, elevate insulin release and increase adrenaline; all of which may have deleterious effects on blood pressure.

Avoidance of sugar, sweets and high refined carbohydrate's,

is recommended.

Sodium Control

RDI 2400 mg for normal healthy adult

The mild HT,2-g sodium level is generally sufficient .

In more severe cases of HT , however , the moderate 1-g sodium level may be indicated.

1 teaspoon of salt is equivalent to 2.4 grams

Tips To Reduce Salt and Sodium

- **Choose low- or reduced-sodium, or no-salt-added versions of foods and condiments when available.**
- **• Choose fresh, frozen, or canned (low-sodium or no-salt-added) vegetables.**
- **• Use fresh poultry, fish, and lean meat, rather than canned, smoked, or processed types.**
- **• Choose ready-to-eat breakfast cereals that are lower in sodium.**

- **Limit cured foods ,foods packed in brine(salt water) (such as pickles, pickled vegetables, olives); and condiments (such as mustard, ketchup).**
- **Treat these condiments sparingly as you do table salt.**
- **Cook rice, pasta, and hot cereals without salt.**
- **Rinse canned foods, to remove some of the sodium.**
- **Use spices instead of salt. In cooking and at the table, flavor foods with herbs, spices, lemon, vinegar, or salt-free seasoning blends. Start by cutting salt in half.**

HOW TO START DASH EATING PLAN

1-Change gradually

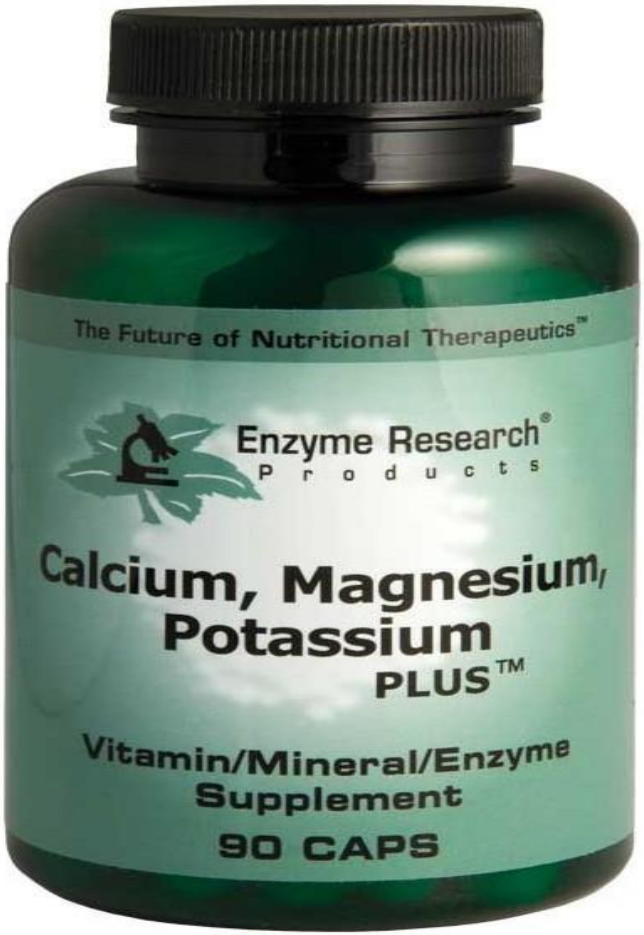
- If now eat one or two vegetables a day, add a serving at lunch and another at dinner.
- If don't eat fruit now or have juice only at breakfast, add a serving to meals or have it as a snack.
- Gradually increase use of fat-free and low-fat milk and milk products to three servings a day. For example, drink milk with lunch or dinner, instead of soda, sugar-sweetened tea.
- Choose fat-free (skim) or low-fat (1 percent) milk and milk products to reduce intake of saturated fat, total fat, cholesterol, and calories and to increase calcium.

2-Treat meats as one part of the whole meal, instead of the focus

- ❑ **Limit lean meats to 6 ounces a day—all that's needed. Have only 3 ounces at a meal, which is about the size of a deck of cards.**
- ❑ **if now eat large portions of meats, cut them back gradually— by a half or a third at each meal.**
- ❑ **Include two or more vegetarian-style (meatless) meals each week.**
- ❑ **Increase servings of vegetables, brown rice, whole wheat pasta, and cooked dry beans in meals.**

3-Use fruits or other foods low in saturated fat, trans fat, cholesterol, sodium, sugar, and calories as desserts and snacks

Calcium/Magnesium/Potassium



Magnesium

FUNCTIONS OF MAGNESIUM

- **Magnesium is needed for more than 300 biochemical reactions in the body. It helps maintain normal muscle and nerve function, keeps heart rhythm steady, supports a healthy immune system, and keeps bones strong.**

- **Magnesium also helps regulate blood sugar levels, promotes normal blood pressure, and is known to be involved in energy metabolism and protein synthesis.**
- **Magnesium is required for energy production, oxidative phosphorylation, and glycolysis.**
- **It contributes to the structural development of bone and is required for the synthesis of DNA, RNA, and the antioxidant glutathione.**

- **There is an increased interest in the role of magnesium in preventing and managing disorders such as hypertension, cardiovascular disease, and diabetes.**

- **Dietary magnesium is absorbed in the small intestines. Magnesium is excreted through the kidneys**
- **Levels of magnesium in hypertensive patients have been consistently low when compared to normal controls.**

- **Studies have revealed magnesium's role as a natural calcium channel blocker (common medication used to treat hypertension) exerting a dilating effect in blood vessels leading to blood pressure reduction.**

- **An adult body contains approximately 25 g magnesium, with 50% to 60% present in the bones and most of the rest in soft tissues**

- **Normal serum magnesium concentrations range between 0.75 and 0.95 millimoles (mmol)/L**

- **Assessing magnesium status is difficult because most magnesium is inside cells or in bone**

What foods provide magnesium?

RDI 420 mg

Magnesium is widely distributed in plant and animal foods and in beverages. Green leafy vegetables, such as spinach, legumes, nuts, seeds, and whole grains, are good sources

In general, foods containing dietary fiber provide magnesium.

DV = Daily Value. DVs are reference numbers developed by the Food and Drug Administration (FDA) to help consumers determine if a food contains a lot or a little of a specific nutrient.

The DV for magnesium is 400 milligrams (mg).

Most food labels do not list a food's magnesium content. The percent DV (%DV) listed on the table indicates the percentage of the DV provided in one serving.

A food providing 5% of the DV or less per serving is a low source while a food that provides 10–19% of the DV is a good source.

A food that provides 20% or more of the DV is high in that nutrient.

Magnesium Deficiency

Symptomatic magnesium deficiency due to low dietary intake in otherwise-healthy people is uncommon because the kidneys limit urinary excretion of this mineral

Habitually low intakes or excessive losses of magnesium due to certain health conditions, chronic alcoholism, and/or the use of certain medications can lead to magnesium deficiency.

The following groups are more likely than others to be at risk of magnesium inadequacy because they typically consume insufficient amounts or they have medical conditions (or take medications) that reduce magnesium absorption from the gut or increase losses from the body.

Magnesium supplementation may be indicated

People with gastrointestinal diseases

The chronic diarrhea and fat malabsorption resulting from Crohn's disease, gluten-sensitive enteropathy (celiac disease),

People with type 2 diabetes

Magnesium deficits and increased urinary magnesium excretion can occur in people with insulin resistance and/or type 2 diabetes .The magnesium loss appears to be secondary to higher concentrations of glucose in the kidney that increase urine output

People with alcohol dependence

Magnesium deficiency is common in people with chronic alcoholism

Some medicines may result in magnesium deficiency, including certain diuretics, antibiotics, and medications used to treat cancer (anti-neoplastic medication)

Examples of these medications are:

Diuretics: Lasix, and hydrochlorothiazide

Antibiotics: Gentamicin, and Amphotericin

Anti-neoplastic medication: Cisplatin

Keep potassium intake at adequate levels

RDI 4700 mg / day for adult

Potassium comes from a variety of food sources.

The 5 Best Sources of Potassium (Banana thrown in for comparison purposes)

*All numbers based on a 100g (3.5 oz) serving unless stated. When you cook vegetables, potassium content increases

#1

DRIED APRICOTS
1162mg*

#2

WHITE BEANS
561mg*; 1C cooked 1004mg

#3

LEAFY GREENS
(Spinach/Swiss Chard)
558mg*; 1C cooked 840mg

#4

POTATO
535mg*; Ave. size 926mg

#5

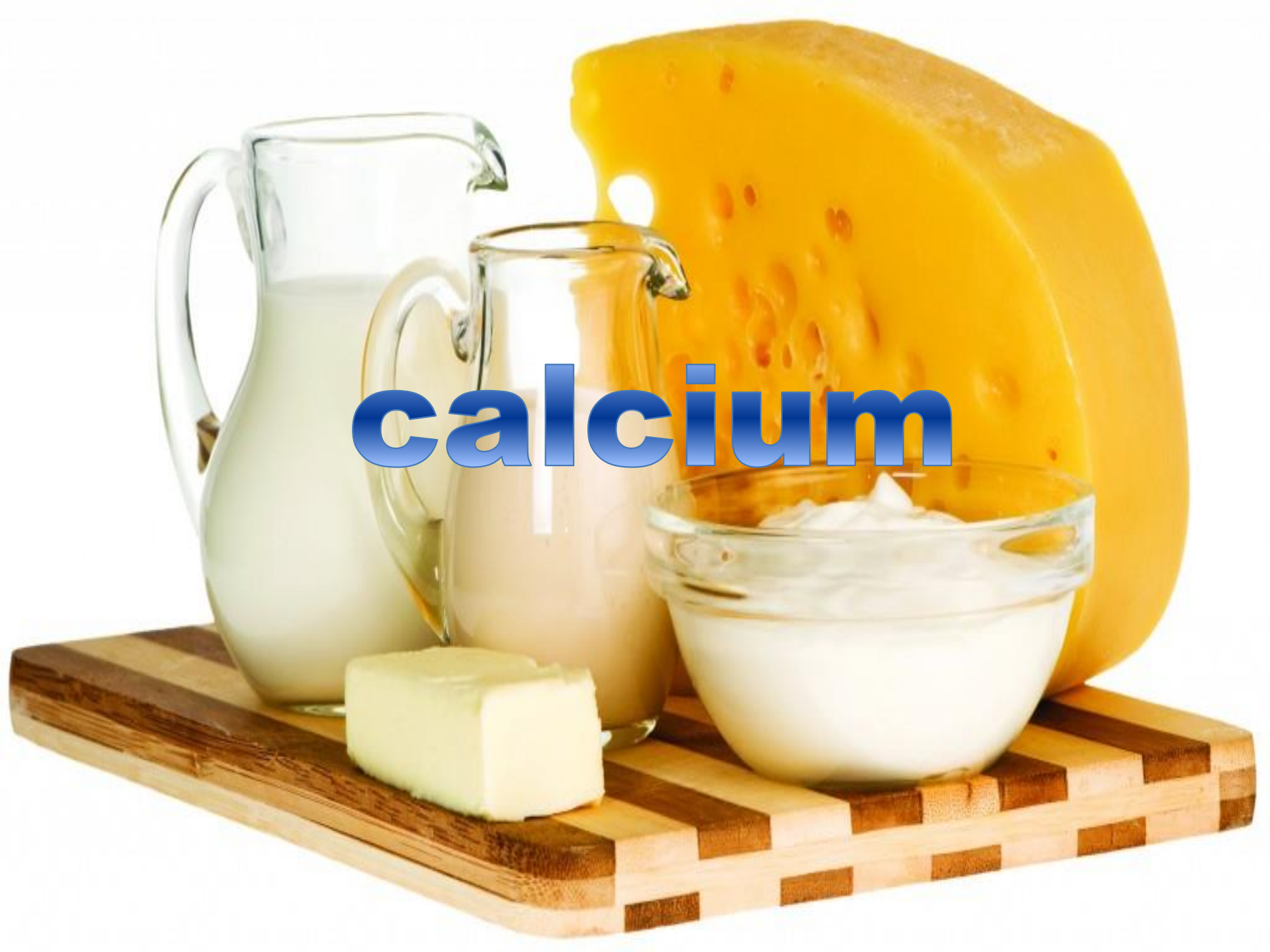
ACORN SQUASH
437mg*; 1C cubed 899mg

BANANAS
358mg*; Ave. size 422mg

Tiny.cc/trowfit

Low-fat or fat-free milk and milk products

Lean meats, fish, and poultry


calcium

Sources of calcium in food

RDI 1300mg

Dairy Products

Milk, yogurt, cheese and other dairy products are all good sources of calcium. Of these, yogurt has the most. There are 452 mg of calcium in one 8 oz container.

FISH

Canned salmon and canned sardines are high in calcium. Sardines are whole canned fish that have high amounts of calcium in their bones. Canned salmon with bones is also a good source of calcium.

Greens

Dark green leafy vegetables such as spinach