



HEALTH BENEFITS OF FRUITS AND VEGETABLES

Dr. Madhurima Chaliha Kalita
Associate Professor
Dept. of Food and Nutrition
Faculty of Home Science
AAU, Jorhat

INTRODUCTION

Fruits and vegetables are an indispensable part of any diet, not only for vegetarians, but also for non-vegetarians. They are plant derivatives and generally are matured ovaries, fruits, flowers, stems and leaves of plants. Fruits and vegetables are important sources of vitamins and minerals for the body. Now a days special emphasis is being paid to the consumption of fresh fruits and vegetable and juices and salad, as they are the important sources of essential minerals and vitamins. Epidemiological studies have shown the importance of a diet rich in fruits and vegetables in the prevention of illness, such as heart disease, cancer, metabolic disorder, nutritional anaemia etc. Low plasma level of micronutrients with antioxidant properties, often found in fruits and vegetables are associated with increase risk for these diseases.

The nutritive value of fruits and vegetables (Range of values per 100 gm)

Nutrient	Green leafy vegetable	Roots and tubers	Other vegetables	Fruits
Moisture (g)	79-92	59-94	72-96	75-90
Calories (Kcal)	32-96	20-160	14-109	10-80
Carbohydrates (g)	4-14	4-38	4-20	2-20
Protein (g)	1.9-6.7	0.7-3.0	0.4-7.0	0.2-2.0
Fat (g)	0.1-1.7	0.1-1.3	0.1-0.4	0-1.0
Calcium (mg)	30-500	10-50	10-130	5-40
Iron (mg)	0.8-16.0	0.4-2.1	0.5-5.8	0.1-1.0
Carotene (µg)	1200-7500	30-3000	5-200	5-500
Ascorbic acid (mg)	48.220	3-24	2-66	2-300
Thiamine (mg)	0.05-0.06	0.05-0.10	0.04-0.25	0.05-0.2
Riboflavin (mg)	0.11-0.14	0.01-0.07	0.01-0.08	0.02-0.1
Nicotini acid (mg)	0.4-0.8	0.3-1.2	0.2-0.9	0.2-1.0
Folic acid (µg)	10-30	3-6	5-10	6-9
Potassium (mg)	250-370	200-370	200-400	86-250
Sodium (mg)	4-91	18-60	10-48	5-15

- **Fair sources of protein**
- **Rich sources of provitamin A (carotene)**
- **Rich sources of ascorbic acid**
- **Good sources of folic acid**
- **Good sources of calcium**

It forms a good supplements to the poor cereal diets.

Roots and tubers are in general

- **Good sources of starch**
- **Poor to fair sources of protein**
- **Poor to fair B-vitamins**
- **Poor to fair Ascorbic acid**

It can be used as partial substitute for cereal in the diet.

Other vegetable are –

- **Good sources of protein and B vitamin (Beans, peas etc.)**
- **Fair sources of ascorbic acid and minerals (pumpkins, gourds, ladies finger, brinjal etc.)**
- **Fair sources of carotene (green peas, yellow pumpkins)**

Fruits are in general

- Good sources of vitamin C and potassium
- Some fruits are good sources of sugars
- It is a good source of acids (tartaric acid and malic acid, citric acid)
- A small quantity of organic acid
- Fruits are good sources of pigments and polyphenols
- Fruits contains several enzymes
- Fruits are rich in pectic substances

The concept of consumption of fruits and vegetable from nutrition point of view was in earlier day as –

- It adds variety in diets by adding flavour and colours.
- It supply adequate micronutrients both minerals and vitamins
- It is essential for maintenance of wide variety of metabolic functions critical for health.
- It is an in expensive source of alternative for micronutrient
- It provides bulk to the diet
- It provides enough of dietary fibre and crude fibre

The concept of consumption of plenty of fruits and vegetables in dieters has been a growing recognition not only essential nutrients needed for life but also other bioactive compounds for health promotion and disease prevention.

Now question arises what are the bio-active compounds.

These compounds are –

- Variety of antioxidants (Phenolics flavonoids)
- Antitoxins and blocking agents inhibiting carcinogenesis, phytochemicals)

The benefit of a diet rich in fruit and vegetables is attributed to the complex mixture of phytochemicals strongly associated with

- Reduced risk of cardiovascular disease – cancer – diabetes – Alzheimer, disease – cataracts and – age – related functional decline.

Health benefits and nutrient contribution of some of the fruits and vegetables.

Name of the fruit	Nutrient contribution	Health benefits
Amla	Good source of vitamin C	<ul style="list-style-type: none">➤ Help as strong antioxidant➤ Helps in iron absorption
Apple	High in soluble fibre and pectin	<p>Reduce blood cholesterol (LDL)</p> <ul style="list-style-type: none">➤ Counters constipation and diarrhoea➤ Traditionally believed in control of arthritis, rheumatism and gout. Improves digestion and absorption. It also improves defence mechanism against illness.
Apricot	Good sources of vitamin C and carotenoid	<p>Lower risk of heart diseases</p> <ul style="list-style-type: none">➤ Stroke, cataract➤ Reduced formation of cancer➤ Steadies blood sugar level➤ Reduced iron def. anaemia

Name of the fruit	Nutrient contribution	Health benefits
Banana	It is rich source of carbohydrates, potassium, magnesium, ascorbic acid and vitamin A	<ul style="list-style-type: none"> ➤ It regulate blood pressure ➤ Provide energy ➤ Provides good stamina ➤ Prevent constipation (ripe banana) ➤ Raw banana Prevent diarrhoea ➤ It help in sleep ➤ Excellent fruit to treat anaemia
Beet	Rich in carbohydrate fibre, minerals and vitamin	<ul style="list-style-type: none"> ➤ Oxidant, laxative, digestible, blood cleanses ➤ Help in Hb formation
Blue berry	It is a good source of iron, fibre and vitamin C	<ul style="list-style-type: none"> ➤ It helps in the reduction and control of cholesterol level
Broad beans	Rich in starch high in fibre and polyphenolic compounds, rich in protein, moderate iron and B vitamins	<ul style="list-style-type: none"> ➤ Good for controlling diabetes

Name of the fruit	Nutrient contribution	Health benefits
Broccoli	High in vitamins, vitamin C, vitamin A, rich in phytochemicals	<ul style="list-style-type: none"> ➤ It protect against diseases ➤ It has multiple cancer fighting properties ➤ It helps in control of diabetes ➤ It plays a role in preventing heart diseases
Cabbage	Good source of vitamin C and fibre contain provitamin A. It also contain folate and phytochemicals	<ul style="list-style-type: none"> ➤ Helps in controlling diabetes ➤ Protect against infection ➤ Prevention from cancer ➤ Help in reducing hypertension
Capsicum	Excellent source of vitamin C, contains provitamin A	<ul style="list-style-type: none"> ➤ It is good for hypertensive patient ➤ It helps to absorption ➤ It also help to improve immune function
Carambola	It is a good source of vitamin C	<ul style="list-style-type: none"> ➤ Ripe sweet carambola is good for treating jaundice patient

Name of the fruit	Nutrient contribution	Health benefits
Carrot	Rich in carotene	<ul style="list-style-type: none"> ➤Protect against infection ➤Provide immune strength to fight against cancer ➤Prevent cataract
Cauliflower	High in vitamin C good source of folate	<ul style="list-style-type: none"> ➤It reduce the blood pressure ➤Good for controlling diabetes
Cherry	Good source of vitamin A, C and energy	<ul style="list-style-type: none"> ➤It is good for hypertensive patient as it don't contain fat, sodium or cholesterol
Cucumber	Moderate in Vitamin C	<ul style="list-style-type: none"> ➤Good for weight reduction programme because of its slow digestion
Figs	Good source of vitamin and mineral	<ul style="list-style-type: none"> ➤Oxidant, laxative, diuretic digestible, blood cleanser ➤It is excellent for liver
French bean	They are the source of pro-vitamin A, vitamin C, fibre, potassium, folate and phytochemicals	<ul style="list-style-type: none"> ➤Fight against diabetes. ➤Good for heart patient ➤Good for maintaining blood sugar level ➤It helps to prevent diseases ➤Reduce risk of cancer

Name of the fruit	Nutrient contribution	Health benefits
Garlic	It contains flavonoids and organosulphur compounds	➤ Helps to reduce the risk of cancer, cardiovascular diseases and diabetes
Gooseberry	It is a good source of provitamin A, vitamin C, potassium and flavonoid	<ul style="list-style-type: none"> ➤ Good for hypertensive and diabetic patient ➤ Act as anti cancer substance
Grape fruit	<p>Low in calorie. Good source of</p> <ul style="list-style-type: none"> ➤ Fibre ➤ Potassium ➤ Flavonoids ➤ Excellent source of vitamin C ➤ Red and pink grapefruit contains carotenoid Lycopene 	<ul style="list-style-type: none"> ➤ Anticancer effects ➤ Cholesterol lowering action ➤ Normalize hematocrit levels. ➤ It conducts sound sleeps ➤ Help in prevention of constipation and stone formation ➤ Excellent in reducing fevers from cold ➤ Helps in hardening of body tissue like liver and arteries

Name of the fruit	Nutrient contribution	Health benefits
Grapes	Good source of pro-vitamin A, carotenoids, vit. C and flavonoids	<ul style="list-style-type: none"> ➤ Help in tumour reduction ➤ Purify the blood ➤ Activated immune system ➤ Grapes promote the action of bowel ➤ Clean the liver ➤ Aid kidney functions ➤ Activate nervous system ➤ Good blood builders
Guava	Good sources of vitamin C, carotenoid	<ul style="list-style-type: none"> ➤ It improves immune system ➤ Helps in iron absorption ➤ Helps in reduction in infection
Kiwi-fruit	Rich in vitamin C	<ul style="list-style-type: none"> ➤ Activate immune system ➤ Help in blood formation
Lemon	Good source of potassium and vitamin C, high in soluble fibre, pectin	<ul style="list-style-type: none"> ➤ Antiseptic ➤ Provide security against stomach and intestine fermentation ➤ They destroy all microbes ➤ During fevers and flues it acts as cleansing agent to the body ➤ It is wonderful for throat trouble
Lettuce	Provides carotenoids	<ul style="list-style-type: none"> ➤ Helps in improving immune system ➤ Reduce the risk of cancer and heart diseases

Name of the fruit	Nutrient contribution	Health benefits
Mango	Rich source of vitamin A and C. Rich in phytochemicals (Antioxidant Lutein)	<ul style="list-style-type: none"> ➤ It acts as depurative ➤ It acts as diuretic ➤ It can combat stomach acidity ➤ It helps the reduction in incidences of cancer
Melons	Good source of pro-vitamin A and C and carbohydrate	<ul style="list-style-type: none"> ➤ It is refreshing ➤ Alkalisising ➤ Mineralising ➤ Oxidant ➤ Diuretic ➤ Have an anticlotting action on the blood ➤ Provide an excellent and finest mineral elements
Olive	Good sources of vitamin C	Recommended for tuberculosis and other chest infections like asthma
Onion	It contains flavonoids	➤ It has beneficial effect against heart disease and possibly cancer

Name of the fruit	Nutrient contribution	Health benefits
Orange	Excellent source of vitamin C. Good source of fibre, potassium. It also contain folate B-complex vitamin	<ul style="list-style-type: none"> ➤ It provides strong defences to the body ➤ Resist infection ➤ Helps in iron absorption ➤ It has a strong antioxidant power ➤ Anti cancer potential (specially of stomach) ➤ Lowers cholesterol level ➤ Can improve and strengthen blood vessels ➤ Maintain cell wall strength ➤ Aiding capillary circulation ➤ Excellent for treating over acid body condition constipation
Papaya	It is rich in enzyme (pepsin), vitamin C, vitamin A, calcium and carbohydrate	<ul style="list-style-type: none"> ➤ It helps in cleansing digestive organ ➤ It is diuretic, laxative and refreshing ➤ Helps in acid – alkaline balance in the body ➤ Use in treatment of stomach, ulcer and fevers
Passion fruit	It is a good source of potassium	<ul style="list-style-type: none"> ➤ It helps in relaxation ➤ It helps in good sleep

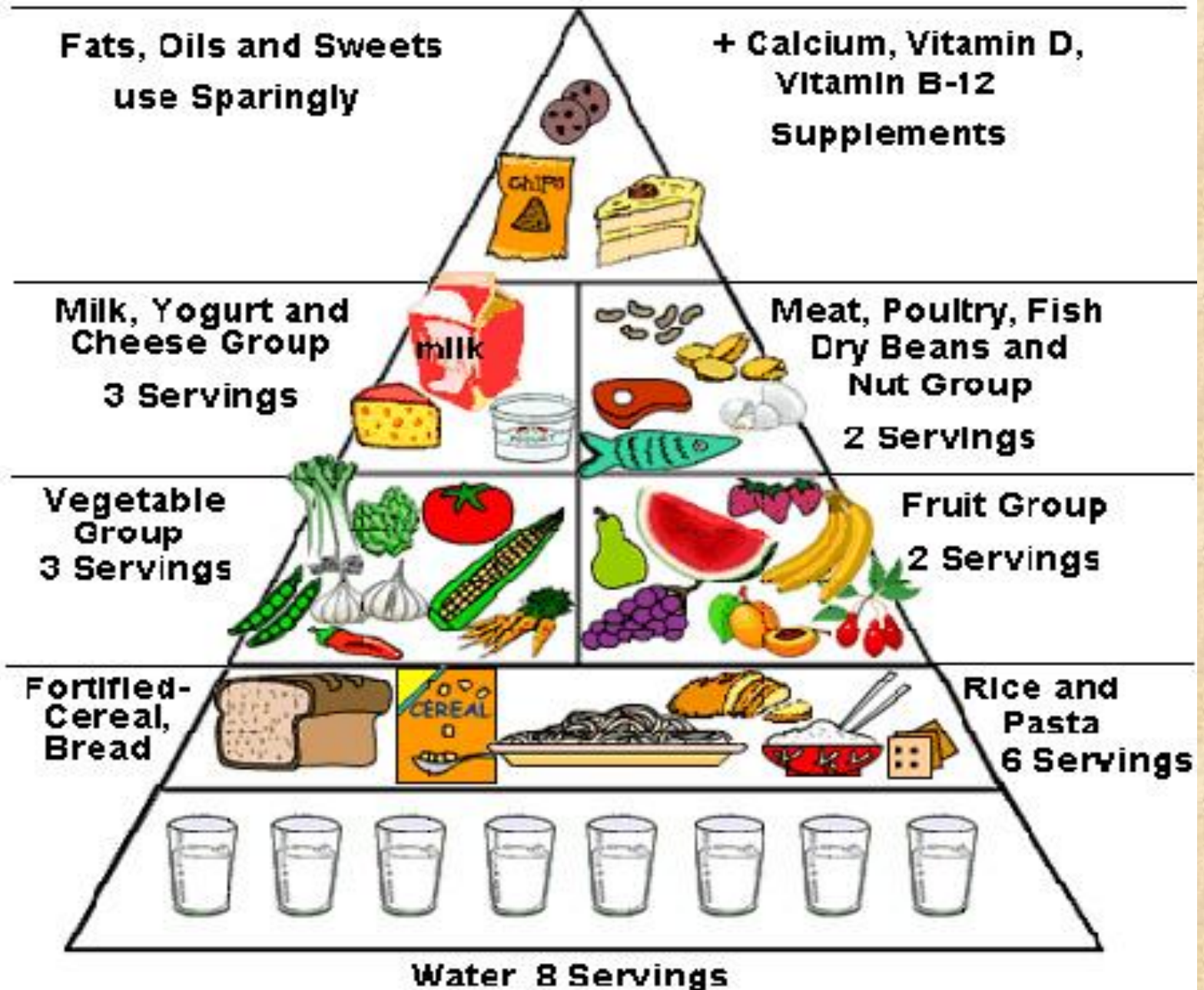
Name of the fruit	Nutrient contribution	Health benefits
Peaches	Moderate concentration of Vit. C and fibre	<ul style="list-style-type: none"> ➤ It help in weight losses due to diuretic depurative and detoxifying action ➤ Prevent lung, liver infections ➤ Prevent cancer ➤ Prevent ulcer ➤ Prevent rheumatic pain ➤ Prevent hypertension and anaemia ➤ Lowered risk of heart diseases
Pears	Good source of vitamin C and fibre	<ul style="list-style-type: none"> ➤ Prevent heart disease, diabetes and cancer
Peas	Rich in protein. It contains some amount of provitamin A. It contains some amount of folate good source of vitamin C, iron and potassium	<ul style="list-style-type: none"> ➤ Help in curing anaemia ➤ Fight against diseases ➤ Good for heart disease
Pineapple	It is rich in vitamin C. Moderate in vitamin A. Good source of dietary fibre	<ul style="list-style-type: none"> ➤ Used to cure rheumatoid arthritis ➤ Used to cure diabetic ulcer and in general surgery ➤ It help in digestion due to presence of enzyme “Bromelain”

Name of the fruit	Nutrient contribution	Health benefits
Plum	Good source of vitamin C, provitamin A, fibre and flavonoids	<ul style="list-style-type: none"> ➤ Helps in prevention of diseases ➤ Good for diabetic and heart patient
Pomegranate	Low in calorie poor in vitamin C good source of vitamin C, potassium and flavonoids	<ul style="list-style-type: none"> ➤ Prevent the infection of heart, liver ➤ Prevent cancer ➤ Prevent diarrhoea ➤ Prevent cancer
Potato	Rich in energy. It also contain folate, vitamin C thiamine, potassium and iron	<ul style="list-style-type: none"> ➤ It can be substitute to cereal as staple food
Radish	Low in energy provides bulk good source of vitamin C and iron	<ul style="list-style-type: none"> ➤ Acts as an antiseptic agent ➤ Good for blood formation
Spinach	It is an excellent source of magnesium, potassium, provitamin A. It is a good source of vitamin C and fibre	<ul style="list-style-type: none"> ➤ Helps in controlling diabetes. Good for controlling anaemia. Prevent heart disease

Name of the fruit	Nutrient contribution	Health benefits
Strawberry	They are rich in vitamin C, folic acid and fibre and no fat	<ul style="list-style-type: none"> ➤ Diuretic and excellent effect on kidney ➤ Used to relieve rheumatism gout
Sweet potato	Good source of carbohydrate contains vitamin C	<ul style="list-style-type: none"> ➤ It can be used as staple food. Helps in the regulation of body function ➤ It can be used as baby food as it is easily digestible
Tomato	It is good source of antioxidant. High in folic acid. It is the richest of all foods in vitamins (like A, B, C)	<ul style="list-style-type: none"> ➤ It help in better vision ➤ It helps to fight against infection ➤ Helps to maintain body lining ➤ Helps in bone growth ➤ Helps to improve reproductive function ➤ Helps in cell development ➤ Reduce the risk of heart disease ➤ It is powerful to fight against cardiovascular diseases ➤ Vitamin K in tomatoes helps to prevent hemorrhages
Water melon	It contain energy and carotenoid	<ul style="list-style-type: none"> ➤ It act as an antioxidant reduce the risk of diseases

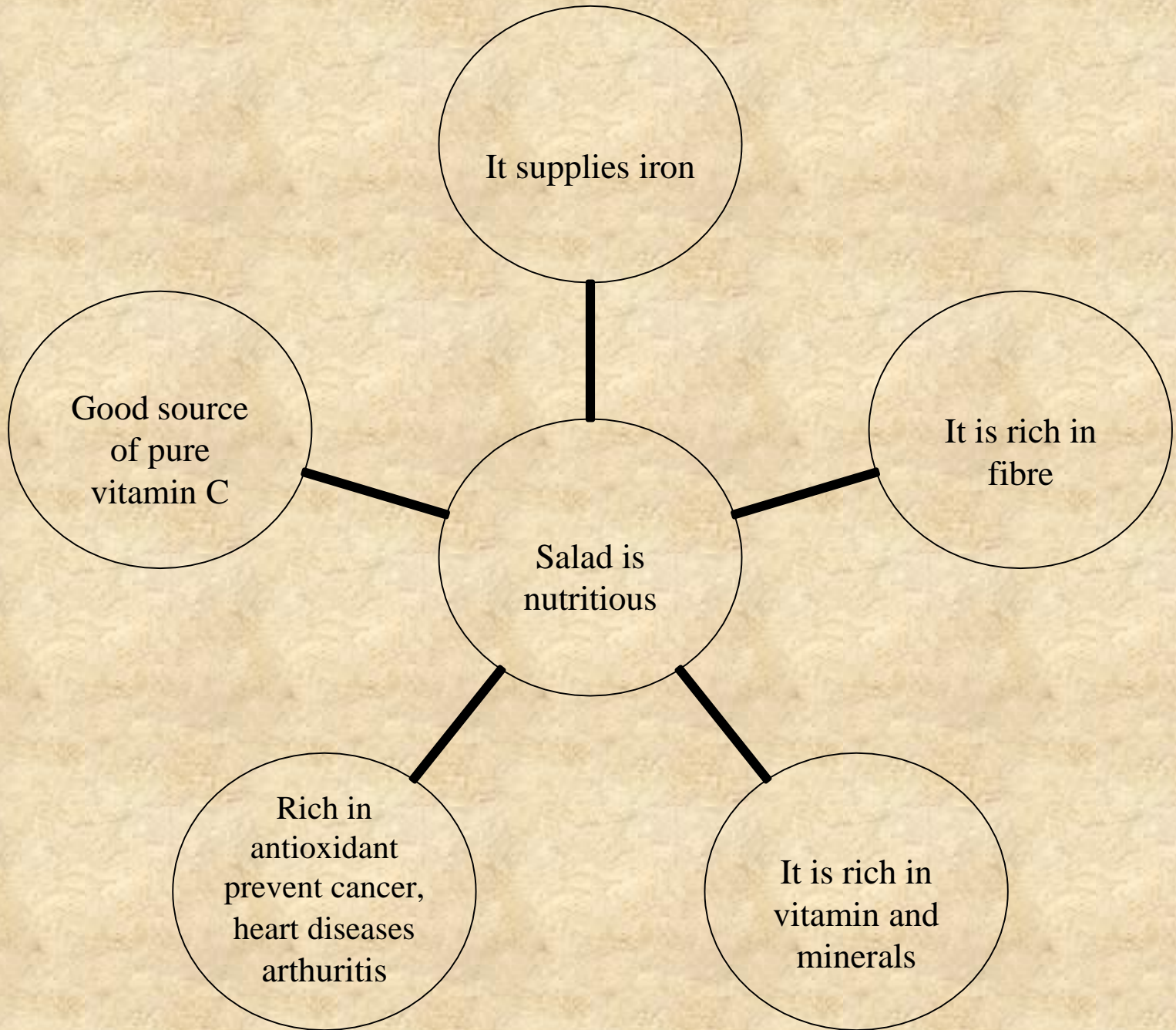
- Eating a balanced diet containing vegetables and fruits is considered the best way of ensuring good health. Fruits and vegetables are not just tasty and nutritious but they also enhance the immune system of our body.
- The consumption of fresh fruit and vegetables are promoted as a first line of defense in the prevention of serious illness with the magic role of anti-oxidant and folate. With the sufficient consumption of fruits and vegetables reduce the risk for cancer and heart diseases, and other chronic diseases. Therefore, it is reasonable for scientists to identify the bioactive compounds responsible and hope to find the “magic bullet” to prevent the chronic diseases. Now the question is whether a purified phytochemicals (8000) has the same benefits as the phytochemicals present in whole fruits and vegetable – till then use the guidelines.

FOOD GUIDE FIGURE



➤ In diseased condition rather than whole fruit and vegetables use concentrated juices and soups.

To meet the fruit and vegetable consumption encourage in mixed fruit and vegetable salad.



It supplies iron

It is rich in fibre

Salad is nutritious

It is rich in vitamin and minerals

Rich in antioxidant
prevent cancer,
heart diseases
arthuritis

Good source
of pure
vitamin C



Thank You