

Chapter 11

Vegetarian Diets

Some Types of Vegetarian Diets

- Vegan or Total Vegetarian Diet: no animal foods at all
- Lacto-Vegetarian Diet: Plant foods + Dairy including cheese
- Ovo-Lacto Vegetarian Diet: Plant foods + Dairy + Eggs
- Semi- Vegetarian Diet: Plant foods + Dairy + Eggs + Chicken + Fish; exclude red meat.
- Pesco- Vegetarian: Exclude red meat and chicken

Characteristics of Vegan Diet

- Tends to be low in fat because all animal foods are excluded.
- Should be high in CHO (complex) and (not simple) so that vegans get enough plant protein with it, so that this protein is spared
- Plant proteins can provide enough amino acids if there is a variety of plants throughout the day.
 - Complimentary proteins not necessarily at the same meal), although traditionally people mix plant protein at the same meal.

Meat Substitutes for Vegans

- Substitutes for 1 oz. of meat in protein content could be:
 - ½ c cooked dry beans
 - 1 Tbsp. peanut butter
 - ¼ c mixed nuts
 - 1 cup soy milk
 - 4 oz. tofu
 - 2 oz. tempeh

Tempeh: fermented
soybean product



Tofu: curdled soybean
milk



Calcium in the Vegan Diet

- Calcium: does not seem to cause health problems even when the intake is lower than the RDA [1000 mg/day for adults]
 - Because vegans absorb and retain more Ca^{+2} than those who are not vegans
 - When they have enough Vitamin D (through intake or through exposure to sunlight).
- +
- If they consume good non dairy sources of Ca^{+2} such as:
 - ✓ Fortified ready to eat cereals.
 - ✓ Fortified soy beverages (soy milk)
 - ✓ Green Leafy Vegetables (not well absorbed)

Vitamin D in the Vegan Diet

- RDA = 15 mcg (600 IU) for adults
- Plays an important role in bone health
- Vitamin D is found naturally in very few foods such as:
 - ✓ Some fatty fish (mackerel, salmon, sardines), fish liver oils, and eggs from hens that have been fed vitamin D.
- Vitamin D is added to some brands of soy and rice milk, and some cereals and margarines.
- Be sure to check food labels.
- If you don't eat enough fortified foods and have limited sun exposure, you may need a vitamin D supplement (one derived from plants).
 - 10-15 minutes summer midday sun exposure provides 15,000 IU of vitamin D.

Iron in the Vegan Diet

- Iron: RDA = 8 mg adult males, 18 mg adult females.
 - ✓ Not well absorbed from plants,
 - ✓ To increase absorption eat with foods that are rich in Vitamin C
 - ✓ Avoid tea drinking with iron containing foods.
- Good sources of non-heme iron:
 - ✓ Fortified cereals: ready to eat or cooked
 - ✓ Dry Beans: lentils, chickpeas
 - ✓ Green vegetables especially leafy such as: broccoli, spinach, mallow , etc.

Zinc in the Vegan Diet

- Zinc: RDA = 8 mg/day for adult women, and 11 mg/day for adult men.
- Zinc absorption is decreased by:
 - a) Dietary fiber,
 - b) Oxalates in greens,
 - c) Phytate in whole grains,
 - d) Soy protein.
- Good plant food sources of Zinc:
 - Legumes, nuts, oats, wheat germ,
 - Fortified plant foods

B12 in the Vegan Diet

- RDA = 2.4 mcg/day
- Vitamin B12: naturally found only in animal foods
- Good sources include:
 - ✓ Fortified cereals
 - ✓ Fortified soy beverages
 - ✓ Vitamin B12 Supplements

Iodine in the Vegan Diet

- RDA = 150 mcg/day
- Iodine is a component in thyroid hormones, which help regulate metabolism and growth. Iodine is essential for brain development
- Vegans may: not get enough iodine, be at risk of iodine deficiency, and possibly even goiter.
- In addition, foods such as soybeans, cruciferous vegetables and sweet potatoes may promote goiter.
- However, just 1/4 teaspoon of iodized salt provides a significant amount of iodine.
 - 1 gram of iodized salt provides 77 mcg of Iodine.
- ❖ Seaweed: 1/4 ounce, dried may contain > 4,500 mcg (4.5 mg) Iodine.

Omega-3 fatty acids in the Vegan Diet

- Omega-3 fatty acids are important for heart health.
- Diets that do not include fish are generally low in active forms of omega-3 fatty acids.
- Canola oil, soy oil, walnuts, ground flaxseed and soybeans are good sources of essential fatty acids.
- However, because conversion of plant-based omega-3 to the types used by humans is inefficient,
 - ✓ Vegans need to consume fortified products or supplements, or both.

The Foundation of a Healthy Vegetarian Diet.

- With good planning, vegetarian diets can provide all nutrients
- Special attention to: Calcium, vitamin D, Iron, Zinc, Vitamin B12, Iodine, Omega -3 fatty acids



Possible Health Benefits of Vegetarianism

- Obesity:
 - Vegetarians maintain lower healthier body weight than non-vegetarians.
 - Lower weight correlates with high intakes of fiber and low intakes of fat
- Hypertension:
 - Vegetarians have lower blood pressure and lower rates of hypertension
 - Other factors impact hypertension.

Possible Health Benefits of Vegetarianism Cont'd.

■ Heart Disease

- ✓ Incidence of heart disease much lower
 - Higher intakes of fiber, antioxidants, vitamins, phytochemicals, and fats

■ Cancer

- ✓ Significantly lower rates of cancer,
 - Ratio of vegetables to meat may be most relevant dietary factor in prevention.

Possible Health Benefits of Vegetarianism Cont'd.

- Vegetarianism may help in preventing:
 - Diabetes,
 - Osteoporosis,
 - Diverticular Disease,
 - Gallstones,
 - Rheumatoid Arthritis,



Meat Analogues

- Meat analogues: are made of vegetable ingredients, and treated to taste and smell somewhat like true meat.

- Some vegetarian meat analogues are based on:
 - ✓ Centuries-old recipes for seitan made of wheat gluten, has a texture similar to chicken
 - ✓ Rice
 - ✓ Mushrooms
 - ✓ Legumes
 - ✓ Tempeh: fermenting cooked soybeans with a mold
 - ✓ Pressed-tofu: curdling fresh hot soybean milk with a coagulant

- With flavoring added to make the finished product taste like chicken, beef, lamb, ham, sausage, seafood.

Meat Analogues: look and smell like meat



Vegetarian duck made from wheat gluten



Tofurky Roast (Turkey Substitute): a mix of Seitan (wheat gluten), tofu and canola oil.



Vegetarian version of Chicken made of Seitan



Rosemary and Sumac Chicken Substitute made of Seitan

Meat Analogues: look like meat and smell like meat



Mince



Burger



Sausages



Deli Slices

Wheat Gluten

- Also called seitan, wheat meat, gluten meat, or simply gluten.
- Made by washing wheat flour dough with water until all the starch dissolves, leaving insoluble gluten as an elastic mass which is then cooked before being eaten.
- Some types of wheat gluten have a chewy and/or stringy texture similar to meat.
- Is often used instead of meat in Asian, vegetarian, Buddhist, and macrobiotic cuisines.

Other Meat Analogues

- Some other meat analogues include:
 - Textured Vegetable Protein (TVP),
 - ✓ Which is a dry bulk commodity derived from soy, soy concentrate,
 - ❖ Uses egg white as a binder making them unsuitable for vegans.
 - Modified defatted peanut flour.

Dairy Analogues

- Dairy analogues may be composed of processed plant foods such as:
 - ✓ Coconut
 - ✓ Rice
 - ✓ Soy
 - ✓ Almond
 - ✓ Cashew
 - ✓ Gluten
 - ✓ Or a combination of the above.
- + flavoring to make it taste like milk, cheeses, yogurt, mayonnaise, ice cream, cream cheese, sour cream, whipped cream, buttermilk, or butter.
- Many dairy analogues contain casein, which is extracted dried milk proteins, making them unsuitable for vegans.

Egg Substitutes

- Some Egg substitutes are made of
 - Tofu
 - Tapioca starch
 - or Similar products
 - ✓ They recreate the leavening and binding effects of eggs in baked goods.
- Many people use fruit products such as banana paste or applesauce as egg analogues in baking.

Cassava



Tapioca Pearls



Tapioca when Hydrated



Dietitian's Role in Vegetarian Diets

- Obtain an accurate diet history in order to determine limitations and plan a good well balanced diet based on nutrient recommendations for adults.
- Provide nutrient dense foods
- Avoid low nutrient foods such as those high in sugar and fat.
- Limit refined grain products and cereals to ensure adequate intake of micronutrients (trace nutrients).
- Avoid excess cholesterol by limiting eggs to 3-4 /week for those who eat eggs.

Ingredients Label

Dietitian's Role Cont'd.

- Vegetarians especially vegans should:
 - ✓ Read labels to make sure that there are:
 - ❖ No hidden animal ingredients in the product:

Macrobiotic Diet

- Macrobiotic" means “ long life.”
- Macrobiotic diets have been promoted for:
 - Maintaining good health.
 - Preventing and "relieving" cancer in particular and other diseases in general.
 - Proponents claim that:
 - Diet starves the rapidly growing cancer cells.

Who else uses this diet?

- Many patients with HIV/AIDS also turn to a macrobiotic diet to help combat the disease.
 - However, these patients and others with immune-suppressed diseases lose alarming amounts of weight, and they also have other medical and nutritional complications.
- ❖ The macrobiotic diet may only exacerbate their problem and cause more nutritional deficiencies depending on how restrictive the diet is.
- ❖ More research is needed on the efficacy of the macrobiotic diet in treatment of cancer.

Macrobiotic Diet

- Cereals and vegetables form a bulk of the diet.
- Restricted diet program composed primarily of and in descending order:
 - Whole grains.
 - Vegetables: locally grown are preferred.
 - Beans.
- Is a vegan diet that excludes:
 - Refined sugar,
 - Artificial sweeteners,
 - Chemical additives.

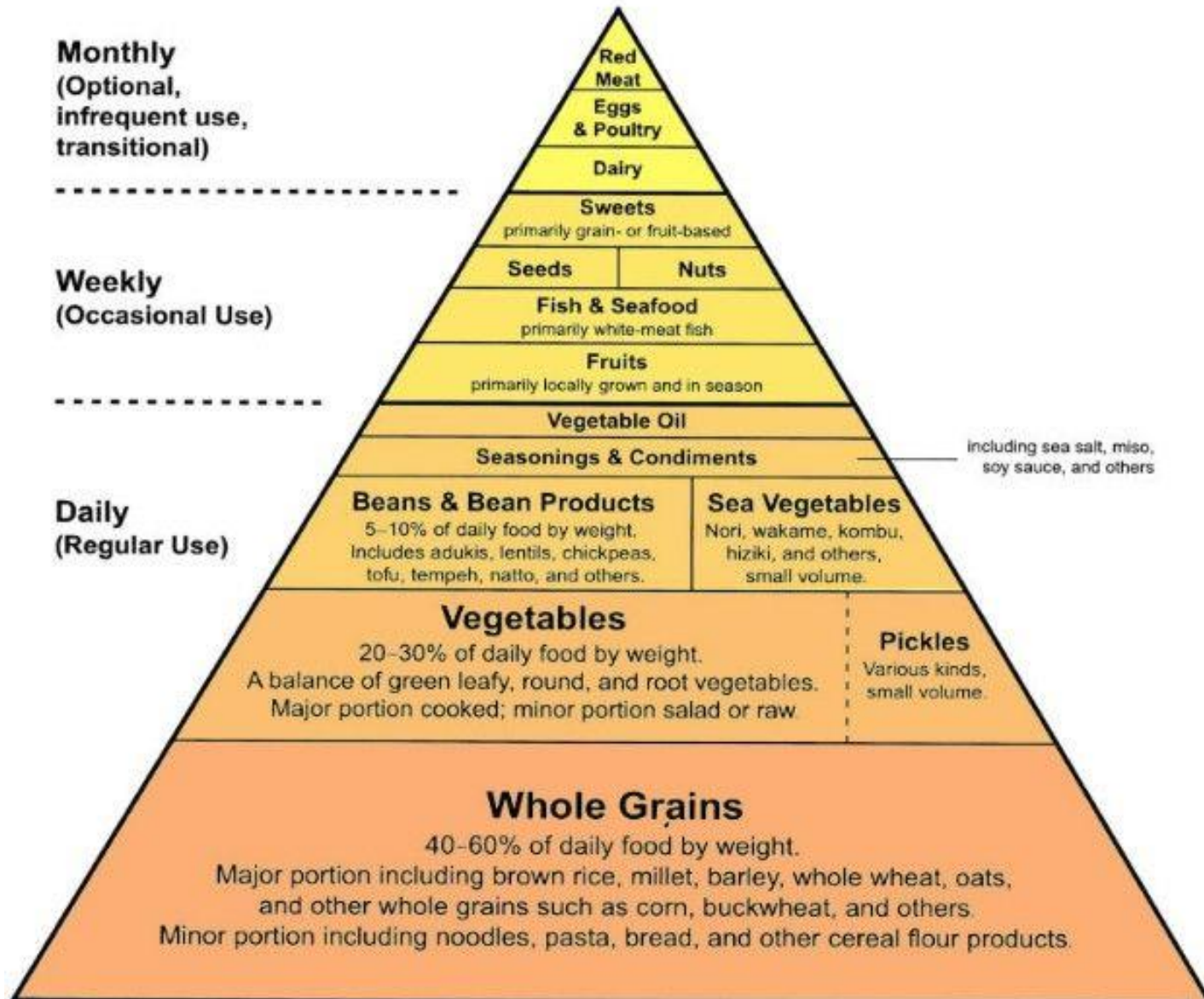
Macrobiotic Diet

- Prefer
 - Organically grown plants and
 - Minimal processing

- Discourages the consumption of:
 - Genetically modified foods,
 - Irradiated, processed, canned, and frozen foods.

Great Life Pyramid

Macrobiotic Dietary Guidelines for a Temperate Climate





Seaweed



Dry Nori Japanese
name for edible
seaweed



Cabbage Nori Rolls



Vegetarian Nori Rolls



A Japanese fermented condiment
made from soybeans, barley or
rice, or a combination of them.

Recommended Foods

- Liquids including:
 - ✓ Spring water or good-quality well water: without ice
 - ✓ Any traditional tea that does not have an aromatic fragrance or a stimulating effect.
- Soups:
 - ✓ Made with vegetables, sea vegetables, grains, or beans,
- Fruit (locally grown, temperate region fruits),
- Mild flavor, quick cooking fish (also called white fish), such as cod, plaice, halibut, etc.
- Seeds, and nuts.

Examples of Temperate Region Fruits

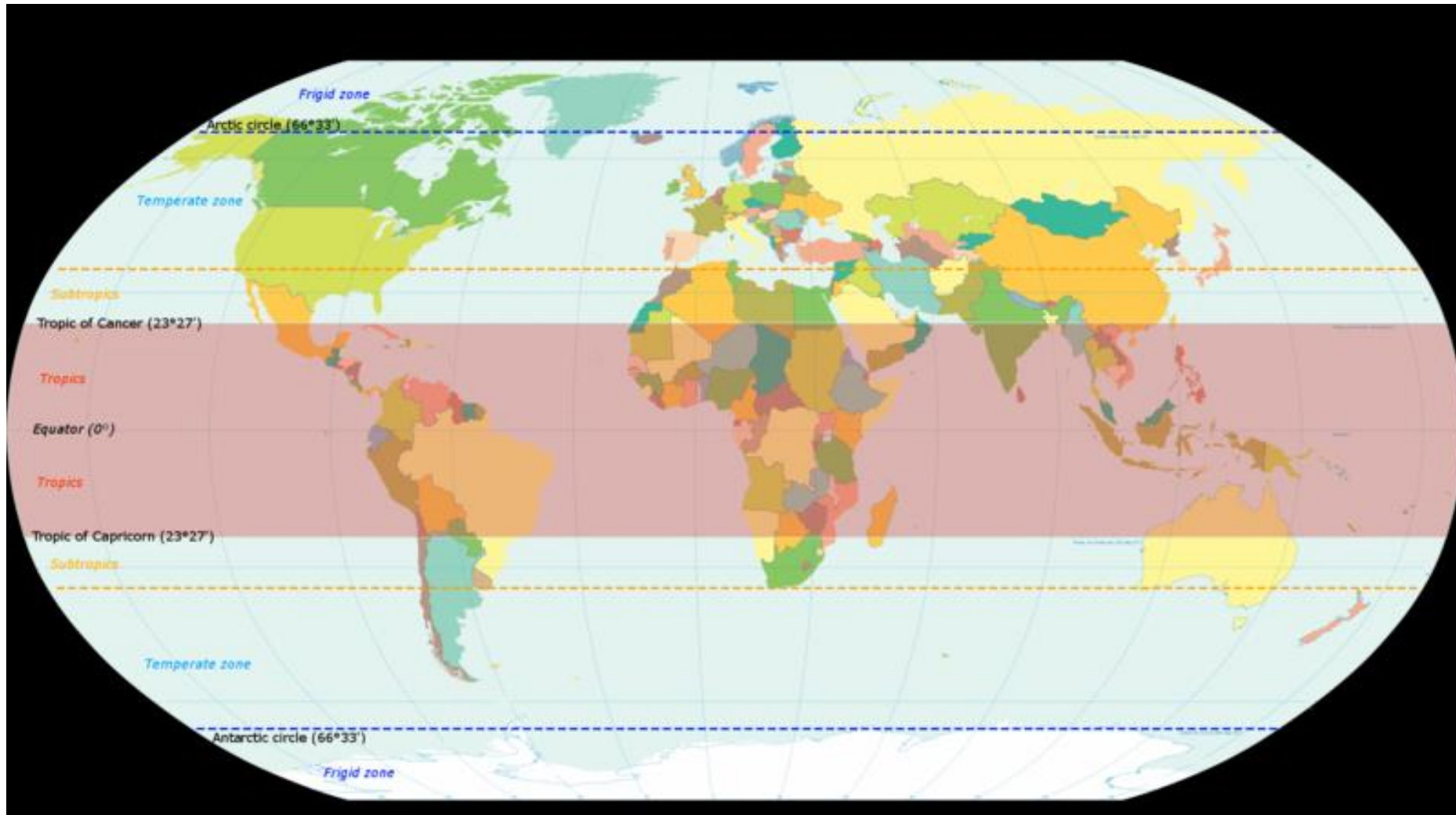
- The most common temperate fruits are:
 - ✓ Apples
 - ✓ Peaches
 - ✓ Pears
 - ✓ Cherries
 - ✓ Plums

Foods Not Recommended

- Tropical or subtropical: fruits and fruit juices such as pineapple, papaya, avocado, passion fruit, tamarind,
- Soda,
- Artificial drinks and beverages,
- Coffee,
- Colored tea (hot water with lots of sugar dissolved in it and then some regular tea poured over it, they remain separated with tea on top).



Tropical and Subtropical Regions



Examples of Common Tropical and Subtropical Fruits (botanically fruits)

- Avocados
- Bananas
- Mangos
- Papayas
- Tamarind
- Guava
- Oranges, grapefruits, lemons, and limes
- Pineapples
- Kiwis
- Cantaloupe

Foods to eat Weekly or Occasionally

- Sweets (primarily grain or fruit based)
- Seeds and nuts,
- Fish and seafood (primarily white meat fish)
- Fruits (primarily locally grown and in season)

Foods allowed on Monthly Basis (optional, infrequent use, Transitional)

- Meat,
- Eggs,
- Poultry,
- Dairy products,

Foods to Eliminate

- Refined sugars
- Animal fats
- Chocolate
- Molasses
- Honey
- Vanilla
- Hot spices
- Artificial vinegar
- Strong alcoholic beverages

Nutrients

- Although the range of intakes varies, macrobiotic diets are generally low in:
 - Energy
 - Protein
 - Fat
- Likely to be inadequate in:
 - Vitamin D
 - Folic acid
 - Riboflavin
 - Calcium
 - Iron
- Most probably deficient in Vitamin B12
- Clinical cases of malnutrition and growth failure in children have been reported.

Food Sources of Vitamin B12

- The best sources of Vitamin B12 include: eggs, milk, cheese, milk products, meat, fish, shellfish and poultry.
- Some soy and rice beverages as well as soy based meat substitutes are fortified with vitamin B12.
- To see if a product contains vitamin B12 check the Nutrition Facts on the food label.

Downfalls of the Diet^{Macrobiotic Diet}

- Protein: If consuming adequate beans, nuts, and soy protein and omega 3 fatty acids, all dietary recommendations should be met.
- Caloric intake is somewhat low. This may be a problem in cancer patients who are having trouble consuming food.
- Diet may not be recommended when there is a need to make new tissue.
- Expensive,
- Time consuming,
- Special Stages of life: Children, adolescents, elderly, pregnant, lactating women, and the sick should consult their health care provider (dietitian) before beginning diet.