

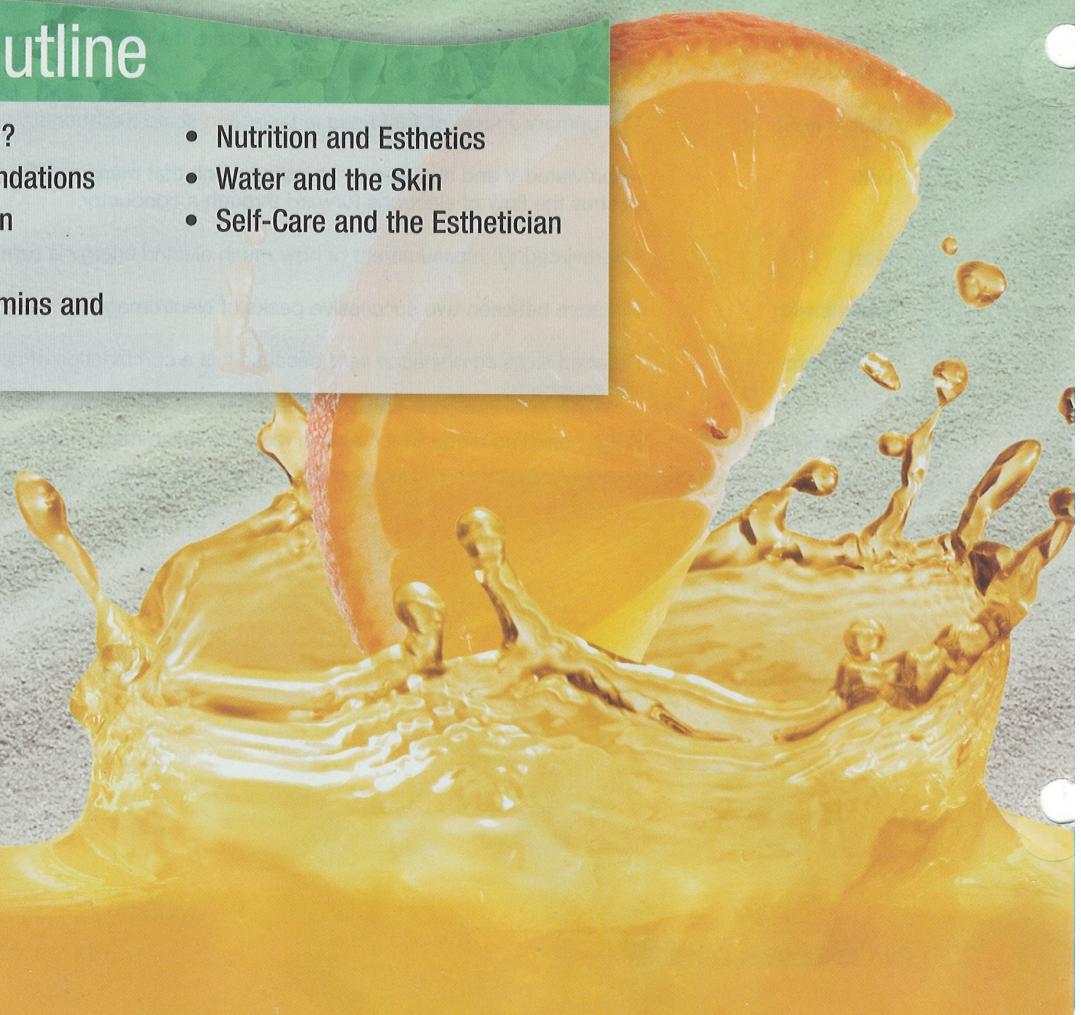
CHAPTER 9

Basics of Nutrition



Chapter Outline

- Why Study Nutrition?
- Nutrition Recommendations
- Nutrition for the Skin
- Macronutrients
- Micronutrients: Vitamins and Minerals
- Nutrition and Esthetics
- Water and the Skin
- Self-Care and the Esthetician



Learning Objectives

After completing this chapter, you will be able to:

- L01** Describe the dietary guidelines for foods.
- L02** Identify macro- and micronutrients.
- L03** Understand vitamins and minerals and their benefits.
- L04** Explain how nutrition relates to healthy skin.
- L05** Discuss the benefits of proper nutrition.
- L06** Explain the importance of water intake.
- L07** Describe why it is important for the esthetician to have good self-care habits.

Key Terms

Page number indicates where in the chapter the term is used.

adenosine triphosphate (ATP) pg. 203	disaccharides pg. 204	minerals pg. 217	retinoic acid (Retin-A®) pg. 211
amino acid pg. 202	enzymes pg. 207	monosaccharides pg. 204	tretinoin pg. 211
arteriosclerosis pg. 206	fats (lipids) pg. 205	mucopolysaccharides pg. 203	vitamin A (retinol) pg. 211
B vitamins pg. 214	fortified pg. 213	nonessential amino acids pg. 202	vitamin C (ascorbic acid) pg. 216
bioflavonoids pg. 217	glycosaminoglycans pg. 203	omega-3 fatty acids pg. 206	vitamin D pg. 213
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carbohydrates pg. 203	linoleic acid pg. 206	polysaccharides pg. 204	vitamin K pg. 214
cholesterol pg. 206	macronutrients pg. 202	proteins pg. 202	
complementary foods pg. 203	micronutrients pg. 208		

All bodily functions, including the building of tissues, are directly related to nutrition. The foods we eat and the water we drink are the basic building blocks of life. Foods are broken down into basic molecules that are then delivered to every cell in the human body. These molecules are used by the cells to repair damage, form new cells, and conduct all biochemical reactions that run the body's systems. They provide energy that enables our bodies to perform numerous functions. The skin is nourished by the blood through the arteries and capillaries in the circulatory system. Think of the body or the cell as a factory. All the necessary systems, departments, units, and components for the factory to function optimally are contained within the foods we consume (**Figure 9–1**).

As we know, estheticians are not licensed dietitians, nor are we adequately trained in nutrition to legally recommend dietary changes to our clients. Clients may be taking medications for health conditions such as diabetes or high blood pressure which can be negatively affected by misleading advice, including supplement recommendations; however, it is beneficial for anyone practicing personal-care services, such as esthetics, to have a good working knowledge of nutrition and how the body is affected by the foods we consume. Good nutrition is necessary for healthy skin.

Why Study Nutrition?

Here are some very good reasons for studying and learning about nutrition that will benefit both you and your clients.

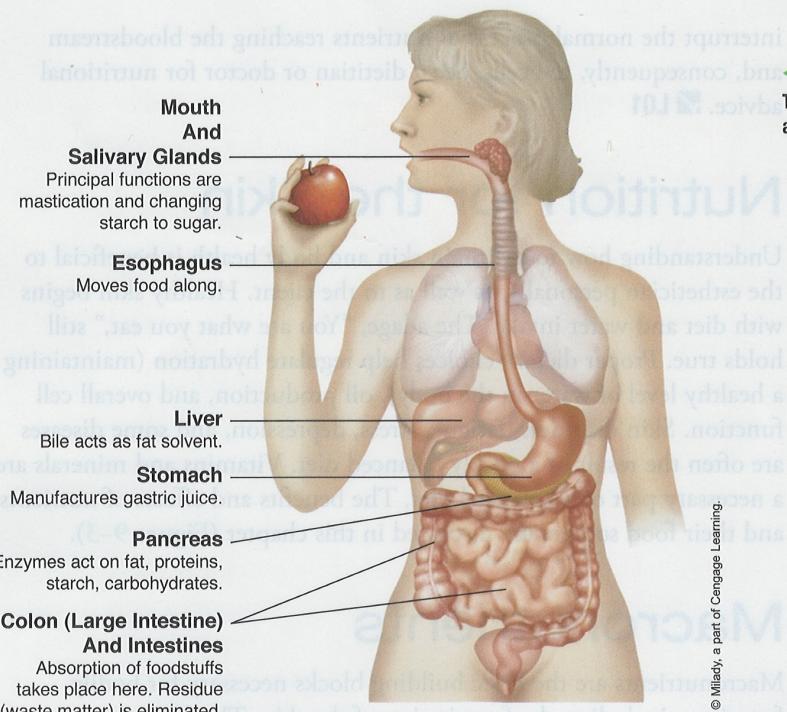
- As estheticians we need to have a strong, healthy body as it is vitally important to the health of your practice, and your practice is related to nutrition and wellness in many ways.
- Understanding proper nutrients for the body in order to maintain optimum energy levels throughout the day is beneficial for all practitioners and their clients.
- Clients will directly benefit from the information and referrals that we can make based on having a basic understanding of nutrition.

Nutrition Recommendations

Nutritional needs depend on various factors such as age, sex, weight, physical activity, and body type. The United States Department of Agriculture (USDA) is the governmental agency that regulates nutrition-related affairs. The USDA issues recommended dietary allowances (RDAs) for certain nutrients, including vitamins and minerals.

The USDA's *MyPlate* is a recommended guideline for food groups that individuals should consume daily and can be personalized based upon an individual's needs. *MyPlate* was issued by the USDA in 2011 to replace





◀ **Figure 9–1**
The digestive system
and food consumption.

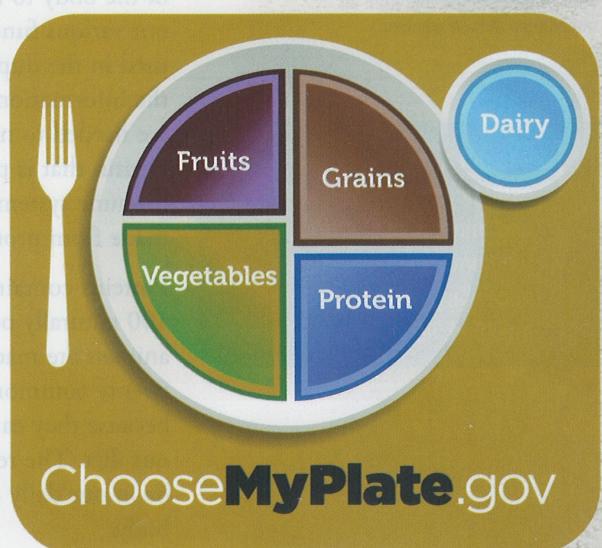
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the food pyramid. The nutritional tool now emphasizes healthy food choices using a visual representation of a plate setting by breaking out the food groups by recommended proportions. Grains, vegetables, dairy, fruits, and protein are the five basic food categories in the *MyPlate* icon (**Figure 9–2**). Nutritional tips, recipes, and other tools for building healthy diets according to individual needs can be found at www.ChooseMyPlate.gov. Three examples of food guidelines are the USDA Food Guide; the Dietary Approaches to Stop Hypertension (DASH) Eating Plan; and the Institute of Medicine's nutrient intake recommendations.

Interestingly, as consumers we have never had more detailed information about the foods we are purchasing and consuming, yet as a nation we have never been more overweight. Many nutritional reports say that much of the population consumes more calories than needed. To safeguard against this, choose foods that are high in nutrients but lower in calories. People of all ages are encouraged to eat foods with more calcium, potassium, fiber, magnesium and vitamins A, C, and E. Other recommended dietary changes are to avoid oversized meal portions and reduce calories, saturated and trans fats, cholesterol, sugars, and salt.

Individual needs such as pregnancy and lactation can affect women's nutritional needs. Diseases or medications that affect the ability to digest food

▼ **Figure 9–2**
The USDA MyPlate illustrates the five food groups to help build healthier diets.



US Department of Agriculture

Did You Know?

The USDA updated the food pyramid to the easy-to-use *MyPlate* in 2011. Did you know there are other food guidelines you may find interesting? Some of these alternatives reflect healthful eating habits from cultures around the world (Asian, Mediterranean, or Latin American for example). Some guidelines emphasize seafood; others are based on a vegetarian diet, while still others address specific health problems. Whichever guidelines you choose to follow depends largely on your nutritional goals, your lifestyle, and your taste buds.

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▲ Figure 9–3
Find beneficial nutrients from an abundance of food sources.

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It is not a function of the esthetician to make vitamin and mineral supplement recommendations, and it is necessary to refer clients to qualified, licensed practitioners.

interrupt the normal process of nutrients reaching the bloodstream and, consequently, the cells. See a dietitian or doctor for nutritional advice. L01

Nutrition for the Skin

Understanding how to maintain skin and body health is beneficial to the esthetician personally, as well as to the client. Healthy skin begins with diet and water intake. The adage, “You are what you eat,” still holds true. Proper dietary choices help regulate hydration (maintaining a healthy level of water in the body), oil production, and overall cell function. Skin disorders, fatigue, stress, depression, and some diseases are often the result of a poorly balanced diet. Vitamins and minerals are a necessary part of a balanced diet. The benefits and effects of nutrients and their food sources are discussed in this chapter (Figure 9–3).

Macronutrients

Macronutrients are the basic building blocks necessary for bodily functions, including the functioning of the skin. The **macronutrients** are the three basic food groups: proteins, carbohydrates, and fats. They make up the largest part of the nutrition we eat. Eating foods found in all three of these basic food groups is necessary to support the health of the body. The recommended intake is protein: 20 percent (105 grams); carbohydrates: 54 percent (281 grams); and fat: 26 percent (60 grams). This is based on an intake of 2,000 calories per day according to the USDA’s DASH Eating Plan.

Proteins

Proteins are chains of **amino acid** molecules that are used by every cell of the body to make other usable proteins. These building blocks carry out various functions required by the cells and the body. Proteins are used in the duplication of DNA, the blueprint material containing all the information that controls the function of every living cell. Proteins are needed to make muscle tissue, blood, and enzymes as well as the keratin that is present in skin, nails, and hair. Proteins are used by the immune system in making antibodies. Collagen and elastin are also made from protein.

Proteins contain essential amino acids. Although there are more than 100 naturally occurring amino acids, the proteins of all plants and animals are made from just 20 “common amino acids.” Eleven of the twenty common amino acids are called the **nonsynthetic amino acids** because they can be synthesized by the body and do not have to be in our diet. The remaining nine are the essential amino acids that must be in our daily diet because they cannot be synthesized by the human body.

Dietary Sources of Proteins

Although meat, fish, poultry, eggs, and dairy products are complete proteins that provide essential amino acids, they should be limited in the diet for various reasons. One example would be with eggs: if you eat too many eggs, you may raise your cholesterol count. Many plant sources are low in fat and also a good source of fiber, but they are not complete proteins because they all lack at least one of the essential amino acids. **Complementary foods** are combinations of two incomplete proteins that, together, provide all the essential amino acids and make a complete protein. Some complementary proteins are peanut butter and bread, rice and beans, beans and corn, and blackeyed peas and cornbread.

Vegetarians must be careful to obtain their daily protein requirements. Those who consume dairy products have an easier time obtaining a sufficient amount of protein. Vegans, people who eat strictly plant products with no dairy products, must be especially careful to consume enough protein in their diets through nuts, grains, legumes, and vegetables. Soy products are particularly beneficial in the vegetarian diet.

Dietary sources of protein come from animal meats as well as fish, eggs, dairy products, nuts, grains, and beans. Although most vegetables also contain protein, it is in smaller proportions. Protein deficiencies can cause anemia, low resistance to infection, and organ impairment.

Carbohydrates

Carbohydrates break down the basic chemical sugars that supply energy for the body. They are frequently called *carbs*. The most important carbohydrate is glucose, because it provides the majority of the body's energy. Glucose is stored in the muscles and liver as glycogen, or animal starch. When muscles are used, glycogen is broken down to provide the energy needed for muscular work. Nutrients are broken down into **adenosine triphosphate (ATP)** (uh-DEE-nuh-zeen tri-FOS-fate), the substance that provides energy to cells. ATP also converts oxygen to carbon dioxide, a waste product we breathe out (Figure 9–4).

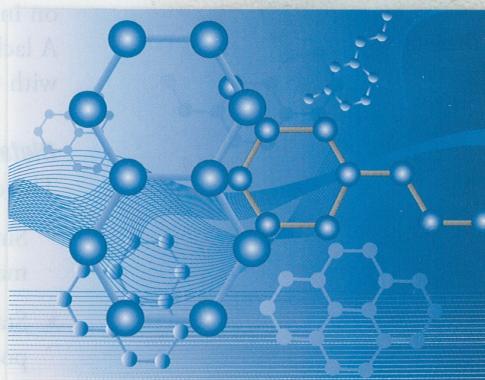
Carbohydrates can be combined with proteins to produce many important body chemicals. For example, **mucopolysaccharides** (mew-ko-poly-SACK-uh-rides) are carbohydrate-lipid complexes that are good water binders. These are important to the skin and are present in the dermis as **glycosaminoglycans** (gly-kose-ah-mee-no-GLY-cans), a water-binding substance between the fibers of the dermis.

Monosaccharides, Disaccharides, and Polysaccharides

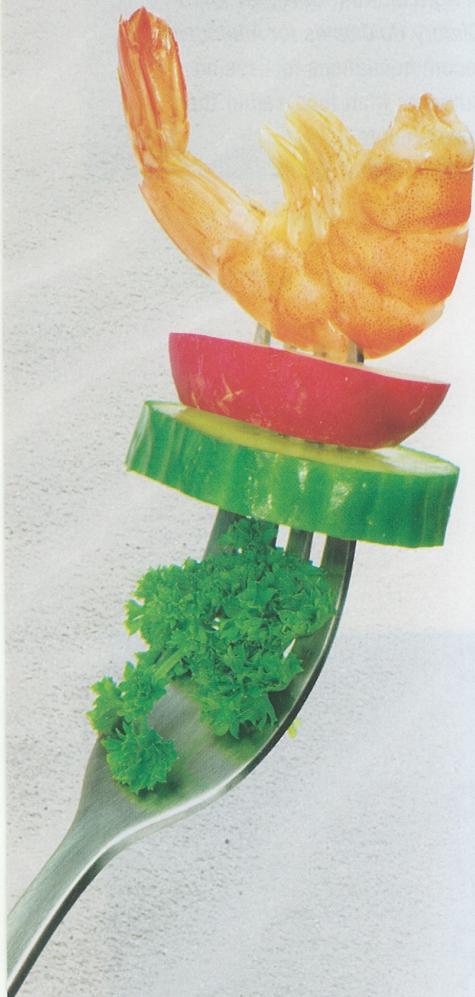
There are three basic structural carbohydrate divisions: monosaccharides, disaccharides, and polysaccharides.

Did You Know?

According to the newest information from the United States Department of Agriculture (USDA), the 2010 *Dietary Guidelines for Americans* recommendations focuses on nutrients from food, rather than supplements.



▲ Figure 9–4
Adenosine Triphosphate (ATP) provides energy to the cells.



Monosaccharides. The most basic unit of a carbohydrate is glucose, the simplest of all carbohydrates. The glucose molecule is known as a monosaccharide (mah-no-SACK-uh-ride; *mono* means *one*, and *saccharide* means *sugar*), a one-unit sugar molecule that all cells use for energy. Fruit sugar (fructose) is a naturally occurring monosaccharide.

Disaccharides (dye-SACK-uh-rides). These are made up of two molecular sugar units (*di* means *two*). Lactose (milk sugar) and sucrose (sugar) are both disaccharides.

Polysaccharides (poly-SACK-uh-rides). These complex compounds consist of a chain of sugar unit molecules (*poly* is from the Greek *polu*, meaning *many*). A digestible polysaccharide starch can be broken down by the digestive system into simpler, usable glucose molecules. Starch is the storage form of glucose for plants. Fiber is also a polysaccharide but is not digestible.

The Three Basic Types of Carbohydrates

The three basic types of carbohydrates are simple sugars, starches, and fiber.

Simple sugars. These are present in table sugar (also known as sucrose), fruit sugars (fructose), and milk sugars (lactose).

Starches. These are also called complex carbohydrates and are present in many vegetables and grains. Starch is a white, odorless, complex carbohydrate that is an important food. In plants, carbohydrates are stored chiefly as starch.

Fiber. Fiber, another type of carbohydrate, is commonly called roughage. It is divided into two categories: soluble and insoluble. These carbohydrates help to move food particles from the digestive tract and on into the colon, where they are ultimately expressed as waste or stool. A lack of fiber is associated with constipation and, in the long term, with colon cancer.

Dietary Sources of Carbohydrates

The dietary sources of carbohydrates include:

- Simple carbohydrates such as sweets, syrups, honey, fruits, and many vegetables.
- Starches, including grains, cereals, breads, and other flour products; potatoes; rice; legumes (beans); and pasta.
- High-fiber foods, including grain, brans (such as oat bran or wheat bran), whole-grain breads, beans, apples, and vegetables such as carrots and corn.

Some foods are listed in two different categories because there is more than one type of saccharide group in many foods. For example, potatoes

are a starch source and also contain fiber. Fruits and vegetables have both simple sugars and fiber (**Figure 9–5**).

Glucose

Blood glucose or blood sugar can drop too low without adequate carbohydrates. This condition is known as **hypoglycemia** (high-poh-gly-SEE-me-ah). Low blood sugar causes symptoms such as fatigue, anxiety, and food cravings. Fluctuating blood sugar levels and food cravings are triggered if the brain is energy starved. Simple carbs, such as table sugar, have no fiber and are quickly absorbed into the bloodstream. Refined carbohydrates such as white bread have their natural fiber and bran milled away, so they enter the bloodstream more quickly but do not provide long-term energy. Eating *good* or complex carbohydrates such as whole grains will help to slow absorption of glucose into the bloodstream and balance glucose levels.

The hormone insulin, produced in the pancreas, brings nutrients and glucose into cells and stores fat. Without insulin, the body cannot utilize glucose. Consequently, there is a high level of glucose in the blood and a low level of glucose absorption by the tissues. Diabetes results from this imbalance. Regulating hormone and glucose levels through proper nutrition is important to maintain good health.

Fats

Fats, also known as **lipids**, are the third group of macronutrients. Fats are used as energy, but not as readily as carbohydrates. Although many people associate fats with obesity, some fat is required in the diet, and it is an essential component of good health. The layer of fat in the body also helps retain heat. Fats are used to produce the materials in the sebaceous glands that lubricate the skin. Lipids are fats or fatlike substances used by the body to make hormones, create cell membranes, and assist in absorption of the fat-soluble vitamins A, D, E, and K.

Fatty Acids

Fats are organic compounds made up of a glycerol molecule and fatty acids. The chemical composition of the carbon and hydrogen molecules that combine with glycerol determine the type of fatty acid. Fatty acids make up triglycerides, the main fat in foods. Triglycerides are fats and oils representing 95 percent of fat intake. Phospholipids (the main lipids in cell membranes) and sterols are the remaining 5 percent.

The three types of fatty acids are saturated, monounsaturated, and polyunsaturated.

- **Saturated fats** such as processed foods have more rigid molecules, and this can cause hardening of the arteries.
- **Monounsaturated fats** from olive oil and canola oil are more fluid molecules and are important for cell integrity and membrane phospholipids.



▲ **Figure 9–5**
Dietary sources of simple carbohydrates.

- **Polyunsaturated fats** are liquid at room temperature and are more easily oxidized. Polyunsaturated fats are found in fish, corn, safflower, and nut oils.

The body has the capacity to manufacture fats for use as needed. These fats can be made from carbohydrates and proteins. Essential fatty acids are acids that the body cannot manufacture on its own, and therefore they need to be extracted internally by the body from ingested food. Fatty acids from food protect against disease and help produce hormones.

Did You Know?

Body fats can store unabsorbed drugs you may have taken years ago.

Disease-preventing omega-3 and omega-6 fatty acids are polyunsaturated fatty acids necessary for brain and body development, metabolism, and hair and skin growth; however, too much omega-6 in the diet can lead to health problems. The typical American diet has an excess of omega-6, while the healthy Mediterranean diet has more omega-3. The dietary amount for omega-3 is recommended to be three times more than omega-6.

Linoleic acid (lyn-uh-LAY-ick AH-sid) is omega-6, an essential fatty acid used to make important hormones and maintain the lipid barrier of the skin. Linoleic acid is found in oils made from safflower, sunflower, corn, soybean, borage, and flaxseed.

Omega-3 fatty acids (Alpha-linolenic) are a type of *good* polyunsaturated fat that may decrease the likelihood of cardiovascular diseases by reducing **arteriosclerosis** (are-TEER-ee-oh-sklur-OH-sis), clogging and hardening of the arteries. Omega-3 fatty acids are largely present in cold-water fish. Salmon is highest in omega-3 acids, but mackerel, tuna, herring, trout, and cod are also high in omega-3. Nutritionists suggest that these fish should be a regular part of the diet and consumed two to three times a week. Alpha-linoleic acid, an omega-3, is a popular nutrient for healthy skin and reducing inflammation. Sources of omega-3 include fish oil, walnuts, flax, pumpkin seeds, and algae (**Figure 9–6**).



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▲ **Figure 9–6**
Salmon rich in omega-3 fatty acids.

Trans Fatty Acids

Trans fatty acids can increase the *bad* type of cholesterol in the blood, known as low-density lipoprotein (lie-po-PRO-teen) (LDL). LDLs are composed largely of cholesterol. Conversely, high-density lipoproteins (HDLs) are *good* lipoproteins with high protein content. Lipoproteins contain protein and lipids that transport water-insoluble lipids through the blood.

The body makes cholesterol, so we do not need to consume large amounts of it in the diet. **Cholesterol** is a waxy substance found in your body that is needed to produce hormones, vitamin D, and bile. Cholesterol protects nerves, the structure of cells, and is vitally important in the body—until we begin to show signs that we have too much in the body.

Cholesterol and phospholipids, along with some triglycerides, are absorbed into the lymph system because they are insoluble in water (blood).

Saturated fats are unhealthy, highly processed fats that raise serum cholesterol. Hydrogenated fats are also detrimental to health because they elevate blood lipids and cholesterol. Saturated fats are found mostly in animal sources and coconut and palm oils.

Too much cholesterol or fat in the diet can result in clogged blood vessels, slowing and blocking blood flow. High levels of blood cholesterol can lead to high blood pressure, heart disease, and stroke. High cholesterol is also genetically determined.

Calories

Fats are very high in **calories**, the measure of heat units. Calories fuel the body by making energy available for work. A gram of fat has 9 calories, while a gram of carbohydrate or a gram of protein has 4 calories. When people take in too many calories, and do not use them in body functions, the body stores the excess calories as body fat. It takes about 3,500 extra calories for the body to store 1 pound (453 grams) of fat. These extra calories can come from the intake of fat, carbohydrates, or even protein.

The number of calories required to run the body varies with individual lifestyles. Obesity in the United States has doubled in the past 2 decades. Nearly one-third of adults are obese; that is, they have a body mass index (BMI) of 30 or greater. Changing our diets and lifestyle is necessary to slow down this prevalent trend. Conversely, some individuals are underweight and malnourished, which is not healthy either. An average weight and balanced diet are the optimum goals for good health.

Dietitians generally believe that 55 to 60 percent of all calories should be obtained from carbohydrates—mainly grains, breads, pasta, vegetables, and fruit. Candy is also a carbohydrate, but sweets should be limited to no more than 240 calories per day for women and 310 calories per day for men.

Most nutritional authorities generally recommend limiting fats to no more than 30 percent of the diet. No more than 10 percent of this amount should come from saturated fats. Saturated fats come primarily from meats and dairy products. Polyunsaturated and monounsaturated fats come primarily from vegetable oils. Foods such as pastries, fast foods, fried foods, snack foods (junk foods), and products containing cream are high in fat and should be avoided or eaten in moderation.

Protein requirements make up the balance of the diet, around 15 to 20 percent. Remember that protein sources, such as meat, also contain fats and carbohydrates.

Enzymes

Enzymes are biological catalysts made of protein and vitamins. Enzymes break down complex food molecules into smaller molecules to utilize

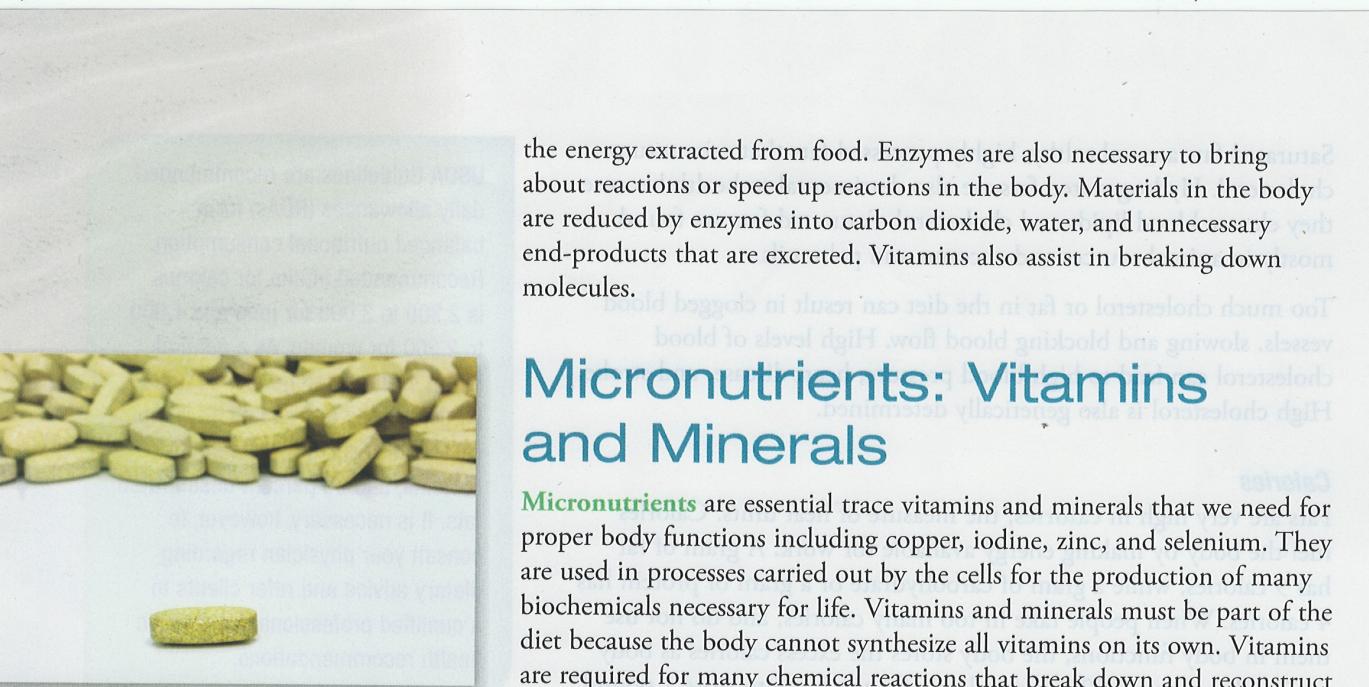
USDA Guidelines are recommended daily allowances (RDAs) for a balanced nutritional consumption. Recommended intake for calories is 2,300 to 3,000 for men and 1,900 to 2,200 for women. As a general range for food categories, 45 to 65 percent of the diet should be complex carbohydrates; 15 to 35 percent proteins; and 30 percent unsaturated fats. It is necessary, however, to consult your physician regarding dietary advice and refer clients to a qualified professional for specific health recommendations.

Web Resources

To calculate your BMI, check out www.healthatoz.com.

CAUTION!

Food allergies are common and can be severe. In other cases a food allergy may go undetected. For example, allergies to shellfish, seaweed, and peanuts can mean adverse reactions to body treatments at spas if product ingredients contain seaweed or peanut oil. Be sure the spa intake form includes questions about allergies and discuss them with your client. Learn as much as you can about ingredients and the potential for allergic reactions clients may have with certain ingredients. Know the ingredients that are contained within the products you are using on the skin. If you have allergies, remember to tell other service providers so that they can best serve you.



▲ Figure 9–7
Micronutrients: vitamins and minerals.

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the energy extracted from food. Enzymes are also necessary to bring about reactions or speed up reactions in the body. Materials in the body are reduced by enzymes into carbon dioxide, water, and unnecessary end-products that are excreted. Vitamins also assist in breaking down molecules.

Micronutrients: Vitamins and Minerals

Micronutrients are essential trace vitamins and minerals that we need for proper body functions including copper, iodine, zinc, and selenium. They are used in processes carried out by the cells for the production of many biochemicals necessary for life. Vitamins and minerals must be part of the diet because the body cannot synthesize all vitamins on its own. Vitamins are required for many chemical reactions that break down and reconstruct proteins, convert amino acids, and synthesize fatty acids. Many vitamins are also involved in energy release from carbohydrates (**Figure 9–7**).

Vitamins play an important role in the skin's health by aiding in healing, softening, and fighting diseases of the skin. Antioxidants such as A, C, and E have all been shown to have positive effects on skin health. Experts agree that eating foods rich in nutrients and loaded with vitamins and minerals is the most important way to achieve health in general; however, taking vitamin and mineral supplements may provide additional skin-health support.

Beyond general health, external applications of vitamins and minerals have shown great benefit to achieve skin health as well. As mentioned, ideally, the nutrients the body needs for proper functioning and survival should come primarily from the foods we eat, however, if a person's daily food consumption is lacking in nutrients, vitamin and mineral supplements can help provide some additional nutrients (making sure not to exceed the RDA) (**Table 9–1**). Medications can interfere with the body's ability to absorb vitamins and minerals. As with all supplements, herbal preparations, and medications, it is necessary to consult with a qualified professional for the proper dosage and implementation of products into one's diet. **L02**

Vitamins

Vitamins fall into two categories: fat-soluble (vitamins A, D, E, and K), and water-soluble (vitamins B and C).

Fat-soluble vitamins A, D, E, and K are generally present in fats within foods. The body stores them in the liver and in adipose (fat) tissue. Because they can be stored in the body, it is possible to get too much of certain vitamins, namely vitamins A and D. Fat-soluble vitamins protect the outside membrane of cells.

Did You Know?

Did you know that 1 pound (453 grams) of fat is equal to 3,500 calories?

A NUTRITION CHART: VITAMINS, MINERALS, AND FOOD SOURCES

VITAMIN RDA	NATURAL SOURCES	FUNCTIONS	DEFICIENCY SYMPTOMS
A 5,000 IU	Yellow and green fruits and vegetables, carrots, dairy products, fish liver oil, yellow fruits	Growth and repair of body tissues, bone formation, vision	Night blindness, dry scaly skin, loss of smell and appetite, fatigue, bone deterioration
B-1 (Thiamine) 1.5 mg	Grains, nuts, wheat germ, fish, poultry, legumes, meat	Metabolism, appetite maintenance, nerve function, healthy mental state, muscle tone	Nerve disorders, cramps, fatigue, loss of appetite, loss of memory, heart irregularity
B-2 (Riboflavin) 1.7 mg	Whole grains, green leafy vegetables, liver, fish, eggs	Metabolism, health in hair, skin, nails; cell respiration; formation of antibodies and red blood cells	Cracks and lesions in corners of mouth, digestive disturbances
B-6 (Pyridoxine) 2 mg	Whole grains, leafy green vegetables, yeast, bananas, organ meats	Metabolism, formation of antibodies, sodium/potassium balance	Dermatitis, blood disorders, nervousness, weakness, skin cracks, loss of memory
B-7 (Biotin) 300 mcg	Legumes, eggs, grains, yeast	Metabolism, formation of fatty acids	Dry, dull skin; depression, muscle pain, fatigue; loss of appetite
B-12 (Cobalamin) 6 mcg	Eggs, milk/milk products, fish, organ meats	Metabolism, healthy nervous system, blood cell formation	Nervousness, neuritis, fatigue
Choline (no RDA)	Lecithin, fish, wheat germ, egg yolk, soybeans	Nerve metabolism and transmission; regulates liver, kidneys, and gallbladder	Hypertension, stomach ulcers, liver and kidney conditions
Folic acid (Folacin) 400 mcg	Green leafy vegetables, organ meats, yeast, milk products	Red blood cell formation, growth and cell division (RNA and DNA)	Gastrointestinal disorders, poor growth, loss of memory, anemia
Inositol (no RDA)	Whole grains, citrus fruits, yeast, molasses, milk	Hair growth, metabolism, lecithin formation	Elevated cholesterol, hair loss, skin disorders, constipation, eye abnormalities
B complex (Niacin) 20 mg	Meat, poultry, fish, milk products, peanuts	Metabolism, healthy skin, tongue and digestive system, blood circulation, essential for synthesis of sex hormones	Fatigue, indigestion, irritability, loss of appetite, skin conditions
B complex (PABA) (no RDA)	Yeast, wheat germ, molasses	Metabolism, red blood cell formation, intestines, hair coloring, sunscreen	Digestive disorders, fatigue, depression, constipation
B-15 (Pantothenic acid) 10 mg	Whole grains, pumpkin and sesame seeds	Metabolism, stimulates nerve and glandular systems, cell respiration	Heart disease, glandular and nerve disorders, poor circulation
C Ascorbic acid 60 mg	Citrus fruits, vegetables, tomatoes, potatoes	Aids in healing, collagen maintenance, resistance to disease	Gum bleeding, bruising, slow healing of wounds, nosebleeds, poor digestion

▲ Table 9–1 A Nutrition Chart: Vitamins, Minerals, and Food Sources.

(continued)

A NUTRITION CHART: VITAMINS, MINERALS, AND FOOD SOURCES

VITAMIN RDA	NATURAL SOURCES	FUNCTIONS	DEFICIENCY SYMPTOMS
D 400 IU	Egg yolks, organ meats, fish, fortified milk	Healthy bone formation, healthy circulatory functions, nervous system	Rickets, osteoporosis, poor bone growth, nervous system irritability
E 30 IU	Green vegetables, wheat germ, organ meats, eggs, vegetable oils	Red blood cells, inhibits coagulation of blood, cellular respiration	Muscular atrophy, abnormal fat deposits in muscles, gastrointestinal conditions, heart disease, impotency
F (no RDA)	Wheat germ, seeds, vegetable oils	Respiration of body organs, lubrication of cells, blood coagulation, glandular activity	Brittle nails and hair, dandruff, diarrhea, varicose veins, underweight, acne, gallstones
K (no RDA)	Green leafy vegetables, milk, kelp, safflower oil	Blood clotting agent, important to proper liver function and longevity	Hemorrhage
P (Bioflavonoids) (no RDA)	Fruits	For healthy connective tissue, aids in utilization of vitamin C	Tendency to bleed easily, gum bleeding, bruising, similar to vitamin C's symptoms
Calcium 1000–1400 mg	Dairy products, bone meal	Resilient bones, teeth, muscle tissue, regulating heartbeat, blood clotting	Soft, brittle bones; osteoporosis, heart palpitations
Chromium (no RDA)	Corn oil, yeast, clams, whole grains	Body's use of glucose, energy, effective use of insulin	Atherosclerosis, diabetic sugar intolerance
Copper 2 mg	Whole grains, leafy green vegetables, seafood, almonds	Healthy red blood cells, bone growth and formation, joins with vitamin C to form elastin	Skin lesions, general weakness, labored respiration
Iodine .15 mg	Iodized table salt, shellfish	Part of the hormone thyroxine which controls metabolism	Dry skin and hair, obesity, nervousness, goiters
Iron 18 mg	Meats, fish, leafy green vegetables	Hemoglobin formation, blood quality, resistance to stress and disease	Anemia, constipation, breathing difficulties
Magnesium 400 mg	Nuts, green vegetables, whole grains	Metabolism	Nervousness, agitation, disorientation, blood clots
Manganese 2 mg	Egg yolks, legumes, whole grains	Carbohydrate and fat production, sex hormone production, bone development	Dizziness, lacking muscle coordination
Phosphorus 800 mg	Proteins, grains	Bone development, important in protein, fat, and carbohydrate utilization	Soft bones, rickets, loss of appetite, irregular breathing
Potassium 2000 mg	Grains, vegetables, bananas, fruits, legumes	Fluid balance; controls activity of heart muscle, nervous system, and kidneys	Irregular heartbeat, muscle cramps (legs), dry skin, general weakness

▲ Table 9-1 (continued)

A NUTRITION CHART: VITAMINS, MINERALS, AND FOOD SOURCES			
VITAMIN RDA	NATURAL SOURCES	FUNCTIONS	DEFICIENCY SYMPTOMS
Sodium 500 mg	Table salt, shellfish, meat and poultry	Maintains muscular, blood, lymph, and nervous systems; regulates body fluid	Muscle weakness and atrophy, nausea, dehydration
Sulphur (no RDA)	Fish, eggs, nuts, cabbage, meat	Collagen and body tissue formation, gives strength to keratin	N/A
Zinc 15 mg	Whole grains, wheat bran	Healthy digestion and metabolism, reproductive system, aids in healing	Stunted growth, delayed sexual maturity, prolonged wound healing
Selenium 0.55 mcg	Whole grains, liver, meat, fish	Part of important antioxidant: glutathione peroxidase	Heart damage, reduces body's resistance to chronic illnesses
Fluoride (no RDA)	Fluoridated water and toothpaste	Bone and tooth formation	Increased tooth decay

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▲ Table 9-1 (continued)

Vitamin A

Vitamin A, also known as **retinol**, is an ingredient used in skin care products designed for aging skin. It has been found to stimulate collagen production and is used in acne treatments. Vitamin A is also a group of compounds called retinoids. Retinol and **retinoic acid** (re-tuh-NO-ik AH-cid), also known as **Retin-A®**, are examples of retinoids.

Vitamin A is necessary for proper eyesight, especially at night. A deficiency in vitamin A can result in a condition known as night blindness, or the impaired ability of the eyes to adapt to the dark. Vitamin A is also important for the proper maintenance of epithelial tissue, which makes up the surface of the lungs, intestines, mucous membranes, the bladder, and the skin. These surfaces produce mucus, which is important for protection and flexibility.

Fat-Soluble Vitamins

Vitamin A supports the overall health of the skin. This vitamin aids in the functioning and repair of skin cells. Vitamin A is an antioxidant that can help prevent certain types of cancers, including skin cancer, and it has been shown to improve the skin's elasticity and thickness.

Topically, vitamin A can be used to treat many different types of acne and other skin conditions, primarily wrinkles. It is found in many over-the-counter (OTC) creams and lotions. Derivatives of vitamin A are used in many skin prescription creams called retinoic acid or Retin-A®, known as **retinoids**. **Tretinoin**, better known as Retin-A® or Renova™,

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▲ Figure 9-8
Before Retin-A® use for mild acne.



▲ Figure 9-9
After Retin-A® use for mild acne.

is used to treat both acne and sun-damaged skin (**Figure 9–8** and **Figure 9–9**). Retinoids are also used in skin care formulations. Retinol helps improve the appearance of sun-damaged skin, and it may help other esthetic disorders. Retinyl palmitate polypeptide and beta-carotene are also used in skin care, primarily for their antioxidant properties.

Without vitamin A, a hard keratin protein forms in the body, impairing cellular function of epithelial tissues, replacing mucus, and sometimes resulting in bacterial infection. These surfaces are also a frequent site for cancer development. Research is ongoing to determine the role of vitamin A in preventing cancer.

Since the body stores vitamin A, consuming too much of it can result in vitamin A toxicity. This condition can be serious, resulting in hair loss, very dry lips, and damage to the liver, spleen, and other organs. People should avoid taking more than about 15,000 retinol equivalents (RE) per day. This condition is generally a problem only when people take too many vitamin A supplements.

Beta-carotene is a provitamin A. Provitamins, also called *precursors*, are vitamin-containing substances that are converted to the actual vitamin once they are in the body. Beta-carotene is responsible for the bright color of many fruits and vegetables. The carotenes consumed in the diet are important in controlling the free radicals formed during biochemical reactions in the body. Research also points to the possibility that carotenes may play an important role in the formation and function of immune system cells.

Beta-carotene is found in colorful vegetables such as carrots, dark green vegetables such as spinach, and in fruits that are orange in color.

Courtesy of Mark Lee Skin Care.

FOCUS ON

Your Skin

Although a healthy diet does not always guarantee healthy skin, you are what you eat. Your body cannot produce healthy skin without the proper nutrients. Antioxidants are your skin's best friend.

Most people get about half their vitamin A from retinol and half from beta-carotene. Milk that has been fortified contains vitamin A. **Fortified** means that a vitamin has been added to a food product. Carrots, pumpkin, yams, fish, and eggs all contain vitamin A.

Vitamin D

Vitamin D is sometimes called the *sunshine vitamin* because the skin synthesizes vitamin D from cholesterol when exposed to sunlight. This is not a recommendation for tanning, because the skin is also severely damaged by sun exposure. Minimal amounts of sunshine are all that is necessary for vitamin D synthesis.

The main function of vitamin D is to enable the body to properly absorb and use calcium, the element needed for proper bone development and maintenance. Vitamin D also promotes healthy, rapid healing of the skin. Because vitamin D helps to support the bone structure of the body, it is found in many fortified foods and dietary supplements. Dietary sources include fortified milk, fish oils, egg yolks, and butter. Foods from plants are not a good source of vitamin D. Some skin care companies are including Vitamin D in their topical formulas for skin health improvements and as an antioxidant as well.

Deficiencies of vitamin D result in a condition called rickets, which is seen in children. Children with rickets do not develop bones normally. In adults, vitamin D deficiency results in a condition called osteomalacia, or adult rickets, which is the gradual softening and bending of the bones. This disease is more common in women than men, and it often first develops during pregnancy.

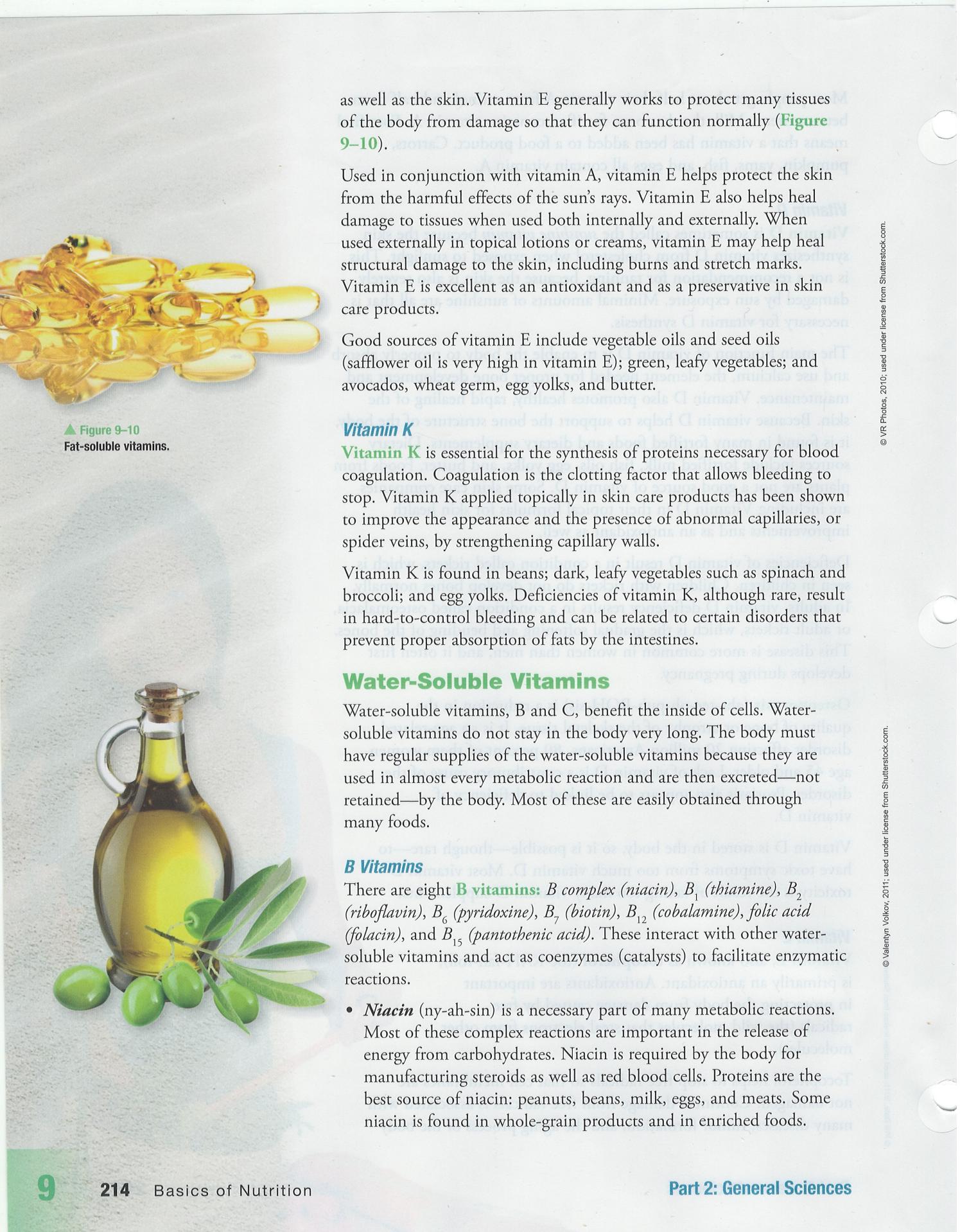
Osteoporosis (ahs-tee-oh-puh-ROH-sis) is a reduction in the quality of bone or atrophy of the skeletal tissue. It is an age-related disorder affecting 20 million Americans, 80 percent of them women age 45 and older. Lack of vitamin D is a contributory cause of the disorder. Psoriasis also appears to be linked to deficiency of vitamin D.

Vitamin D is stored in the body, so it is possible—though rare—to have toxic symptoms from too much vitamin D. Most vitamin D toxicity is the result of taking too many vitamin D supplements.

Vitamin E

Vitamin E, also known as **tocopherol** (toe-KAH-fah-roll), is primarily an antioxidant. Antioxidants are important in protecting the body from damage caused by free radicals (the wild molecules that steal electrons from other molecules).

Tocopherol helps to stop free radicals so that cell membranes are not damaged. Continual damage from free radicals is associated with many diseases, tumor formation, and the aging process of the body.



▲ Figure 9–10
Fat-soluble vitamins.

as well as the skin. Vitamin E generally works to protect many tissues of the body from damage so that they can function normally (**Figure 9–10**).

Used in conjunction with vitamin A, vitamin E helps protect the skin from the harmful effects of the sun's rays. Vitamin E also helps heal damage to tissues when used both internally and externally. When used externally in topical lotions or creams, vitamin E may help heal structural damage to the skin, including burns and stretch marks. Vitamin E is excellent as an antioxidant and as a preservative in skin care products.

Good sources of vitamin E include vegetable oils and seed oils (safflower oil is very high in vitamin E); green, leafy vegetables; and avocados, wheat germ, egg yolks, and butter.

Vitamin K

Vitamin K is essential for the synthesis of proteins necessary for blood coagulation. Coagulation is the clotting factor that allows bleeding to stop. Vitamin K applied topically in skin care products has been shown to improve the appearance and the presence of abnormal capillaries, or spider veins, by strengthening capillary walls.

Vitamin K is found in beans; dark, leafy vegetables such as spinach and broccoli; and egg yolks. Deficiencies of vitamin K, although rare, result in hard-to-control bleeding and can be related to certain disorders that prevent proper absorption of fats by the intestines.

Water-Soluble Vitamins

Water-soluble vitamins, B and C, benefit the inside of cells. Water-soluble vitamins do not stay in the body very long. The body must have regular supplies of the water-soluble vitamins because they are used in almost every metabolic reaction and are then excreted—not retained—by the body. Most of these are easily obtained through many foods.

B Vitamins

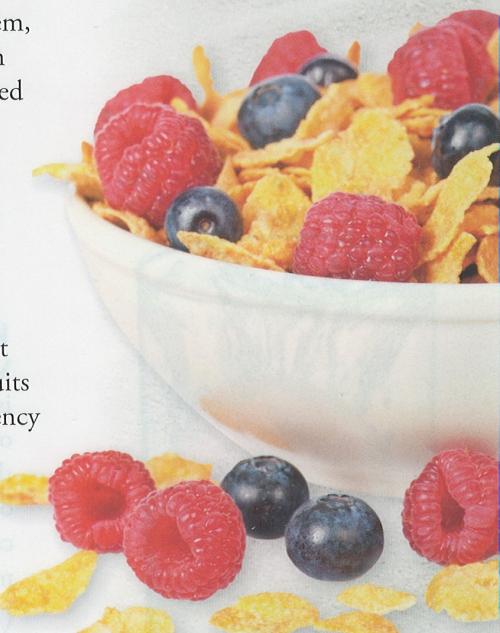
There are eight **B vitamins**: *B complex (niacin), B₁ (thiamine), B₂ (riboflavin), B₆ (pyridoxine), B₇ (biotin), B₁₂ (cobalamine), folic acid (folacin), and B₁₅ (pantothenic acid)*. These interact with other water-soluble vitamins and act as coenzymes (catalysts) to facilitate enzymatic reactions.

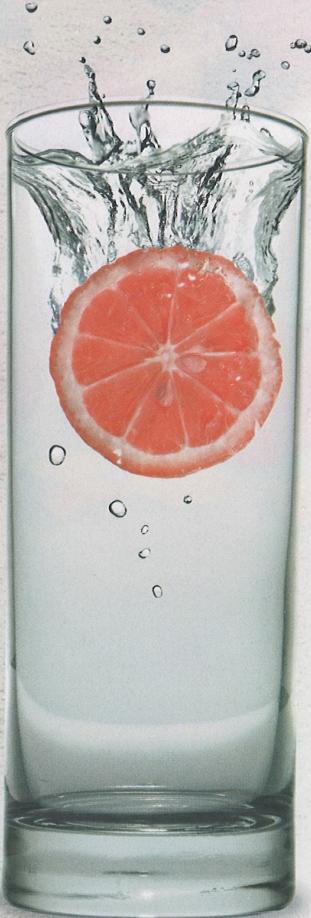
- **Niacin** (ny-ah-sin) is a necessary part of many metabolic reactions. Most of these complex reactions are important in the release of energy from carbohydrates. Niacin is required by the body for manufacturing steroids as well as red blood cells. Proteins are the best source of niacin: peanuts, beans, milk, eggs, and meats. Some niacin is found in whole-grain products and in enriched foods.

Pellagra is a disease associated with niacin deficiency. Pellagra can affect the skin, mental functions, the intestinal tract, and can cause death.

- **Riboflavin** (ry-bo-flaa-vin) (vitamin B₂) is a water-soluble vitamin that works with enzymes to produce energy in cells. Cells use vitamin B₂ to manufacture various amino acids and fatty acids. Vitamin B₂ is found in milk; meats; liver; dark green leafy vegetables; broccoli; eggs; and salmon and tuna. Grains and bread are often fortified with riboflavin. Deficiencies can result in retarded growth, nerve tissue damage, dryness of the skin, and cracks at the corners of the mouth, known as cheilosis (chay-low-sis).
- **Thiamine** (thy-ah-meen) (vitamin B₁) removes carbon dioxide from cells and converts carbohydrates stored as fat. Vitamin B₁ is found in pork, beef, fortified cereals, whole wheat products, and nuts. Beriberi is the disease caused by B₁ deficiency. Beriberi affects the nervous system, and it can slow the heart rate as well as cause mental dysfunction. In children it can stunt growth. Vitamin B₁ deficiency can also be caused by alcohol abuse.
- **Pyridoxine** (py-ride-ox-ene) (vitamin B₆) is important in the metabolism of proteins, both for breaking down and reconstructing amino acids as needed by the body. Several important chemicals, including histamine, are produced in conjunction with vitamin B₆. Research has shown vitamin B₆ can help improve the effects of premenstrual syndrome (PMS) and irritability. Vitamin B₆ is present in meats, soybeans, fish, and walnuts as well as in vegetables and fruits such as bananas, potatoes, prunes, and avocados. Vitamin B₆ deficiency results in many symptoms, including poor coordination and mental acuity problems, and it can affect the level of white blood cells. Vitamin B₆ is strongly connected to protein synthesis. Many problems are associated with a deficiency and create a domino effect on many other reactions.
- **Folacin** (foll-ah-sin), also known as *folic acid*, is an important B vitamin. It is involved in processing amino acids and in transporting certain molecules. This is important for cells that make chemicals conducive to mental health. Vitamin B₁₂ and vitamin C must be present for folacin to work properly. Like many other important vitamins, folacin is found in dark green leafy vegetables. Asparagus, cantaloupe, sweet potatoes, and green peas are all good sources of folacin. Deficiencies can cause various mental problems, including moodiness, hostility, and loss of memory. There is a connection between low intakes of folacin and birth defects, as well as colorectal cancer.
- **Biotin** (bio-tin) (vitamin B₇) is involved in energy formation by cells, as well as in the synthesis of both proteins and fatty acids. It is produced in the intestinal tract by microbes (good bacteria) and is present in milk, liver, and other organ meats. Deficiencies are primarily

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caused by intestinal disorders or by poor absorption. Antibiotics can kill off good bacteria along with the bad, causing lower levels of biotin.

- **Cobalamin** (co-bal-a-meen) (vitamin B₁₂) is important in the activation of folacin, fatty acid synthesis, and DNA synthesis in conjunction with proper red blood vessel formation by the bone marrow. Liver, salmon, clams, oysters, and egg yolks are some good food sources of vitamin B₁₂. A disorder known as pernicious anemia is caused by a lack of vitamin B₁₂, or from poor absorption of the vitamin caused by other diseases. Absorption of this vitamin decreases with age, making deficiency symptoms more likely to occur in older persons.
- **Pantothenic acid** (pant-o-then-ik ah-sid) (vitamin B₅) is important in various processes involved in synthesizing fatty acids and in metabolizing proteins and carbohydrates. Its role in fatty acid synthesis includes the synthesis of hormones, cholesterol, and phospholipids. The latter two are important in the barrier function of skin (the lipid matrix that protects the skin's surface). This vitamin also aids in the functioning of the adrenal glands. Pantothenic acid deficiency is practically nonexistent. Pantothenic acid is present in many foods, but not in fruits.

Vitamin C

Vitamin C, also known as **ascorbic acid** (uh-SKOR-bick AH-cid), is an antioxidant that helps protect the body from many forms of oxidation and from problems involving free radicals. Research indicates that an adequate intake of vitamin C may help prevent cancer because of its ability to scavenge free radicals that attack DNA. DNA damage can lead to the formation of cancerous cells. Vitamin C performs numerous functions in the body.

Vitamin C is an important vitamin needed for proper repair of the skin and tissues. Vitamin C is important in fighting the aging process and promotes collagen production in the dermal tissues, keeping the skin healthy and firm. It is required for collagen formation in skin as well as in cartilage and spinal discs. Vitamin C also renews vitamin E by allowing it to neutralize more free radicals. When applied topically in serums, lotions, and creams, vitamin C has been found to increase collagen and to lighten skin.

Vitamin C also helps prevent damage to capillary walls and can help prevent easy bruising, bleeding gums, and capillary distension.

Vitamin C acts to prevent cardiovascular disease by helping to maintain blood vessel walls and by preventing oxidation of bad cholesterol, which can lead to clogging in the blood vessels. Vitamin C assists the body in dealing with stress, and it is easily depleted during times of great stress. This vitamin supports the healing process of the

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body. Studies also show that vitamin C helps reduce the time and severity of colds.

Vitamin C is found in citrus fruits; dark green leafy vegetables; tomatoes; and other fruits and vegetables. Vitamin C is easily depleted in smokers, which is important because smokers have more free radicals forming in their bodies. Researchers suggest that smokers need twice as much vitamin C as nonsmokers do. Symptoms of scurvy from vitamin C deficiency include easy bruising, bleeding gums, poor wound healing, and anemia. Scurvy is rare, but it can occur in people with very poor diets and is occasionally seen in senior citizens.

Bioflavonoids (by-oh-FLAH-vuh-noids), which are referred to as vitamin P, enhance absorption of vitamin C. Bioflavonoids relieve pain and bruises. They also protect capillary blood vessels. Bioflavonoids promote circulation, have an antibacterial effect, and can reduce the symptoms of oral herpes. Bioflavonoids are antioxidants found in citrus peel, peppers, grapes, garlic, berries, and green tea.

Minerals

The body requires many **minerals**, inorganic materials essential in many cell reactions and bodily functions. Most are required in relatively small quantities, but they are, nevertheless, necessary for life.

Some of the important minerals and their functions are as follows:

- **Calcium** is important in forming and maintaining teeth and bones. It helps prevent osteoporosis, a degenerative disease that results in brittle bones.
- **Magnesium** is required for energy release and protein synthesis, preventing tooth decay, and maintaining nerve and muscle movement.
- **Phosphorus** is present in DNA and is involved in energy release. It is needed for bone formation and cell growth, and it assists vitamin and food energy processes.
- **Potassium** is required for energy use, water balance, and muscular movement. It aids in maintaining blood pressure and regulates cell nutrient transfers and reactions. It is also important in heart and nervous system functions.



Did You Know?

Vegetarians need more protein, iron, and vitamin B₁₂ as well as calcium and vitamin D. One egg, ½ ounce (14 g) of nuts, or ¼ cup (57 g) of legumes is equivalent to 1 ounce (28 g) of meat.

fyi

The term *moderately active* means an activity level equal to walking 1.5 to 3 miles (2.4 to 4.8 km) at a pace of 3 to 4 mph (3.8 to 6.4 km/h) and daily light physical activity. The term *active* includes activity equal to walking more than 3 miles (4.8 km) per day.

Walking burns 280 calories per hour. Running burns 590 calories per hour.

ACTIVITY

Keep a log of your day's food intake by reading labels and recording calories and nutritional values. Compare these values to the RDAs. How close did you come to eating the recommended portions? A daily food log can help you be more aware of what you are eating and inspire healthy habits.

- **Sodium** moves carbon dioxide, regulates water levels, and transports materials through cell membranes. It also regulates blood pH and helps in stomach, nerve, and muscle function. To limit sodium intake, people should consume less than 2,300 mg (approximately 1 teaspoon [5 milliliters] of salt) of sodium per day. Choose and prepare foods with little salt. Sodium and potassium need to be balanced, so consume potassium-rich foods such as fruits and vegetables. On average, the higher an individual's salt (sodium chloride) intake is, the higher his or her blood pressure will be. Nearly all Americans consume substantially more salt than they need. Decreasing salt intake is advisable to reduce the risk of elevated blood pressure.

Trace Minerals

Other minerals needed in the body are trace minerals. These are required in very small quantities. All of these minerals are necessary for correct body functions, and many are present in cells and tissues. The following are brief descriptions of trace mineral functions, but they are by no means complete.

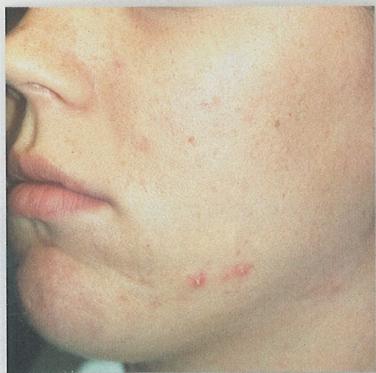
- **Iron** is used in the production of hemoglobin and oxygenation of red blood cells. It is also essential for enzymes and for the immune system.
- **Iodine** helps metabolize excess fat and is important in development and thyroid health.
- **Zinc** is important for protein synthesis and collagen formation. It also promotes wound healing and helps the immune system.
- **Copper** aids in formation of bone, hemoglobin, cells, and elastin. It is involved in healing, energy production, and is essential for collagen formation.
- **Chromium** (chro-me-um) helps with energy and the metabolism of glucose and aids in synthesizing fats and proteins. Chromium also stabilizes blood sugar levels.
- **Fluoride** is needed for healthy teeth and bone formation.
- **Selenium** (sil-en-e-um) is a vital antioxidant protecting the immune system. It works with vitamin E to produce antibodies and to maintain a healthy heart; it is also needed for tissue elasticity.
- **Manganese** (man-gun-eze) assists protein and fat metabolism, promotes healthy nerves, and supports immune system function. Manganese also aids in energy production and bone growth.  L03

Nutrition and Esthetics

Proper nutrition is a primary factor in maintaining the skin's health. Some foods directly affect certain conditions of the skin, but there are

also many myths about food and the skin. An example is the widely held belief that chocolate can cause or worsen acne. The truth is that junk foods and sweets are unhealthy and should not be consumed in large quantities, but they may not directly affect acne; however, excess iodine in one's diet may trigger acne in some cases. It is best to refer a client to a qualified physician for further evaluation (**Figure 9–11**).

As scientific studies continue, the correlation between foods and acne will become clearer. It is well known that spicy foods and alcohol consumption can induce rosacea flare-ups. Diet will affect the skin, and skin is an indicator of the body's overall health. Some women have such low-fat diets that their body fat drops too low, resulting in hormonal imbalances that can cause skin problems, including hyperpigmentation and forms of acne. Chapter 13, Skin Care Products: Chemistry, Ingredients, and Selection, discusses the effects of topical vitamins and antioxidants on the skin. **L04**



Courtesy of Mark Lees Skin Care.

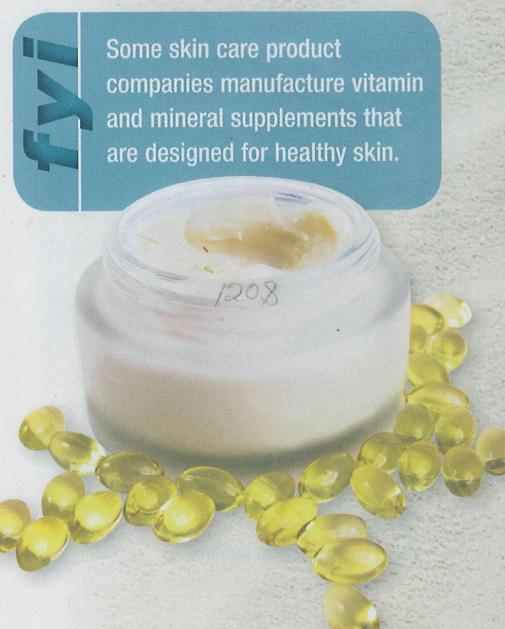
▲ Figure 9–11
Excess iodine can trigger acne
in some cases.

Client Health Concerns

Obesity and weight loss are concerns for many clients. Although clients may talk to you about their health-related issues, it is important to remember that unless you are formally educated in nutrition, you are not a source of counsel for persons with nutritional concerns. To do so might endanger your client's health and have legal consequences. All clients who have serious questions about nutritional issues should be referred to a registered dietitian. Fad diets are rampant. Every week there is some new, magical weight-loss gimmick or plan.

Here is the truth about weight loss:

- The only way to lose weight is to burn more calories than you consume.
- Certain diets can cause chemical imbalances that may damage the body.
- Vitamins and supplements are not substitutes for proper nutrition. You can get most of the vitamins and minerals you need from a balanced diet.
- Vitamin and mineral supplements have little nutritional value because they do not provide the basics—the carbohydrates, proteins, and fats necessary for life processes.
- You must eat a balanced diet for the vitamins and minerals to have any effect. If you look at nutrition as building and maintaining a house, the nails (vitamins and minerals) are no good without the wood and the bricks (macronutrients).
- No magical ingredient can cause weight loss without having other, sometimes harmful, effects on the body.
- The best way to lose weight, and to maintain proper weight, is to adopt a healthy diet along with proper exercise.



Food Choices

Healthier food choices are more readily available in today's health-conscious world. The abundance of choices makes it easier to eat nutritious, high-quality foods.

Web Resources

www.choosemyplate.gov

www.health.gov

www.ams.usda.gov

www.fda.gov

www.quickstudycharts.com

Education and scientific advances have increased our knowledge of nutrition and how foods affect our health. Organic foods are grown without pesticides or added chemicals and are becoming more popular as awareness increases. Farmer's markets and health-food sections of grocery stores have become common. Fast-food restaurants are offering healthier alternatives. Selecting what we put in our bodies is a choice, and eating fresh foods without preservatives is one of them. Nutritional and herbal supplements are another topic altogether. A wealth of information is available on nutrition and health. As with anything else, doing research and checking facts for accuracy is recommended. As scientific research improves, what may be true today could change tomorrow.

Fad Diets

Fad diets are those which promise quick weight loss. They may vary from eating one type of food exclusively to eating multiple foods in a systematic format. As we know, there are no limits to what you might find in the way of a fad diet today. Most fad diets should be looked at from a discerning perspective, as they can be unhealthy for the body. One of the major problems with eating in an imbalanced manner is that it likely will create just that in the body. Eating balanced nutritional foods is vital for our health on many levels: from the energy that we acquire to supporting proper blood sugar level needs to making certain that we have the required essential vitamins and minerals in the body in order to ward off illnesses, health problems, and weight gains.

Here are some situations to be aware of when looking at a potential fad diet:

- Exaggerated claims or promises that sound too good to be true
- The purchase of a product is necessary to obtain weight loss
- The elimination of various food groups (all meat or all carbohydrate)
- Studies that cannot be supported
- Selling the product becomes part of the weight-loss program

Always follow the nutritional advice of your healthcare provider, and refer clients to qualified practitioners for this advice as well. This is a wonderful referral service that we can provide for our clients, and it can work as a tremendous networking benefit to you and your clients. L05



▲ Figure 9-12

Water is an essential nutrient.

Water and the Skin

There is one essential nutrient no person can live without, and that is water (Figure 9-12). To function properly, the body and skin both

rely heavily on water. Water composes 50 to 70 percent of the body's weight. Drinking pure water is essential to keeping the skin and body healthy; it sustains cell health, aids in elimination of toxins and waste, helps regulate body temperature, and aids in proper digestion. When all of these functions perform properly, they help the skin stay healthy, vital, and attractive. Drinking 9 to 12 cups (2 to 3 liters) of water a day is an average recommendation.

Water Facts

- An estimated 75 percent of Americans are chronically dehydrated. Research suggests that the benefits of water on human health and functioning are many.
- Even mild dehydration will slow metabolism by as much as 3 percent.
- Drinking lots of water can help stop hunger pangs for many dieters.
- Lack of water is the number one cause of daytime fatigue.
- A 2 percent drop in body water can trigger fuzzy short-term memory, trouble with basic math, and difficulty in focusing on a computer screen or printed page.

Water Intake Requirements

The amount of water needed by an individual varies, depending on body weight and level of daily physical activity. Here is an easy formula to help you determine how much water is needed every day for maximum physical health: Take your body weight and divide by 2. Divide this number by 8. The resulting number approximates how many 8-ounce glasses of water you should drink every day. For instance, if you weigh 160 pounds, you should drink 10 glasses of water a day. If you engage in intense physical activity each day, add two extra glasses of water to the final number. This will help replace extra fluids lost while exercising. Drinking excessive amounts of water is not recommended, so increase the amount only if you are thirsty or dehydrated. As with all healthy habits, moderation is usually the best choice for nutritional balance. **L06**

Self-Care and the Esthetician

As estheticians it is vital that we develop and use good health habits to set an example for our clients and to increase our own age prevention while enjoying excellent health. Here are 14 essential tools for practicing wellness inside and out:

- Exercise: Move your body (walking, running, hiking) for $\frac{1}{2}$ hour at least three times a week

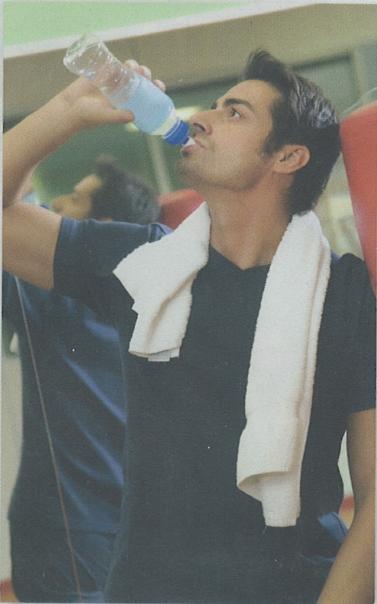
Here's a Tip

Keep a large bottle of water on hand daily to keep the body hydrated. Offer clients water during their services (Figure 9–13).



▲ Figure 9–13
Encourage clients to drink water to maintain healthy skin.

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▲ **Figure 9–14**

Make sure you are drinking enough water.

ACTIVITY

We have presented a basic overview of nutrition in this chapter. If you are interested in learning more about this subject, check out nutrition courses or textbooks to give yourself a better knowledge base for both nutrition and health issues.

- Hydrate: Make certain that you are getting enough water (**Figure 9–14**)
- Eat: Fresh fruits and vegetables of all colors everyday for antioxidant benefits
- Balance the fats: Eat no more than 30 percent of overall caloric intake in fats, and 10 percent or less in *bad* saturated fats
- Reduce inflammation: Minimize sugar and processed food intake
- Manage your protein: Keep protein at 20 percent of total caloric daily intake
- Cook lightly: Steam, poach, or stir-fry foods instead of grilling, broiling, or baking
- Frequent the fiber: Add more whole grains, nuts and seeds, or cereals to your diet
- Drink green tea: Sipping on green tea helps to lower cholesterol, reduces blood sugar levels, and provides additional antioxidant benefits
- Have regular massages: Trade services with other practitioners
- DO NOT SMOKE: By now, we all know that smoking is detrimental to our health, both inside and outside; start a smoking cessation program as soon as possible if you are still smoking; visit: www.smokefree.gov
- Make healthy friends: Maintain good healthy relationships; the esthetics' profession demands your best
- Schedule routine health checks: Make certain to have your regular dental cleanings, physicals, and other health screenings (**Figure 9–15**)
- Have fun: Remember your passion for esthetics and make time for you! **L07**



► **Figure 9–15**

Schedule your routine health screenings.

Review Questions

- 1.** What is MyPlate?
- 2.** What are calories?
- 3.** What are the three macronutrients?
- 4.** What are proteins?
- 5.** What are carbohydrates?
- 6.** Why is fat necessary in the diet?
- 7.** What are the micronutrients?
- 8.** What are the fat-soluble vitamins?
- 9.** What are the water-soluble vitamins?
- 10.** Which vitamins are antioxidants?
- 11.** How is vitamin A beneficial for the skin?
- 12.** Name the eight B vitamins.
- 13.** List the minerals and trace minerals.
- 14.** Why is water essential for the body?
- 15.** How does vitamin C affect the skin?
- 16.** What is a “fad” diet and why should we avoid them?
- 17.** Why is it important for the esthetician to have good health and nutritional habits?

Glossary

adenosine triphosphate.	Abbreviated ATP; the substance that provides energy to cells and converts oxygen to carbon dioxide, a waste product we breathe out.
amino acid	Organic acids that form the building blocks of protein.
arteriosclerosis	Clogging and hardening of the arteries.
B vitamins	These water-soluble vitamins interact with other water-soluble vitamins and act as coenzymes (catalysts) by facilitating enzymatic reactions. B vitamins include niacin, riboflavin, thiamine, pyridoxine, folacin, biotin, cobalamine, and pantothenic acid.
bioflavonoids	Biologically active flavonoids; also called vitamin P; considered an aid to healthy skin and found most abundantly in citrus fruits.
calories	A measure of heat units; measures food energy for the body.
carbohydrates	Compounds that break down the basic chemical sugars and supply energy for the body.
cholesterol	A waxy substance found in your body that is needed to produce hormones, vitamin D, and bile; also important for protecting nerves and for the structure of cells.
complementary foods	Combinations of two incomplete foods; complementary proteins eaten together provide all the essential amino acids and make a complete protein.
disaccharides	Sugars made up of two simple sugars such as lactose and sucrose.
enzymes	Catalysts that break down complex food molecules to utilize extracted energy.

Glossary

fats	Also known as <i>lipids</i> ; macronutrients used to produce energy in the body; the materials in the sebaceous glands that lubricate the skin.
fortified	A vitamin has been added to a food product.
glycosaminoglycans	A water-binding substance between the fibers of the dermis.
hypoglycemia	A condition in which blood glucose or blood sugar drops too low; caused by either too much insulin or low food intake.
linoleic acid	Omega-6, an essential fatty acid used to make important hormones; also part of the skin's lipid barrier.
macronutrients	Nutrients that make up the largest part of the nutrition we take in; the three basic food groups: protein, carbohydrates, and fats.
micronutrients	Vitamins and substances that have no calories or nutritional value, yet are essential for body functions.
minerals	Inorganic materials required for many reactions of the cells and body.
monosaccharides	Carbohydrates made up of one basic sugar unit.
mucopolysaccharides	Carbohydrate-lipid complexes that are also good water-binders.
nonessential amino acids	Amino acids that can be synthesized by the body and do not have to be obtained from the diet.
omega-3 fatty acids	Alpha-linoleic acid; a type of "good" polyunsaturated fat that may decrease cardiovascular diseases. It is also an anti-inflammatory and beneficial for skin.
osteoporosis	A thinning of bones, leaving them fragile and prone to fractures; caused by the reabsorption of calcium into the blood.
polysaccharides	Carbohydrates that contain three or more simple carbohydrate molecules.
proteins	Chains of amino acid molecules used in all cell functions and body growth.
retinoic acid	Also known as <i>Retin-A®</i> ; vitamin A derivative that has demonstrated an ability to alter collagen synthesis and is used to treat acne and visible signs of aging; side effects are irritation, photosensitivity, skin dryness, redness, and peeling.
tretinoin	Transretinoic acid, a derivative of Vitamin A used for collagen synthesis, hyperpigmentation, and for acne.
vitamin A	Also known as <i>retinol</i> ; an antioxidant that aids in the functioning and repair of skin cells.
vitamin C	Also known as <i>ascorbic acid</i> ; an antioxidant vitamin needed for proper repair of the skin and tissues; promotes the production of collagen in the skin's dermal tissues; aids in and promotes the skin's healing process.
vitamin D	Fat-soluble vitamin sometimes called the <i>sunshine vitamin</i> because the skin synthesizes vitamin D from cholesterol when exposed to sunlight. Essential for growth and development.
vitamin E	Also known as <i>tocopherol</i> ; primarily an antioxidant; helps protect the skin from the harmful effects of the sun's rays.
vitamin K	Vitamin responsible for the synthesis of factors necessary for blood coagulation.