

APPENDIX 3

Useful and Poisonous Plants, Fungi, and Algae

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Wild Edible Plants, Fungi, and Algae

Words of Caution

At least some parts of literally thousands of native and naturalized plants, fungi, and algae have been used for food and other purposes by Native Americans. Many were also used by the immigrants who came later from other areas of the world. A representative compilation of wild edible plants and fungi is shown in Table A3.1.

The list of plants and fungi in Table A3.1 has been compiled from a variety of sources; the author has had opportunities to sample only a fraction of these himself and cannot confirm the edibility of all of the organisms listed. *The reader is cautioned to be certain of the identity of a plant or fungus before consuming any part of it.* Cow parsnip (*Heracleum lanatum*) and water hemlocks (*Cicuta* spp.), for example, resemble each other in general appearance, but although cooked roots of cow parsnip have been used for food for perhaps many centuries, those of water hemlocks are very poisonous and have caused many human fatalities.

Many species of organisms are now on rare and endangered species lists, and a number of them will become extinct within the next few years. Although the wild edible plants and fungi discussed here may not presently be included in such lists, it might not take much indiscriminate gathering to endanger their existence as well. Because of this, one should exercise the following rule of thumb: *Never reduce a population of wild plants by more than 10% when collecting them for any purpose! If the population consists of less than 10 plants, do not disturb it.*

Poisonous Plants and Fungi

Literally thousands of plants and fungi contain varying amounts of poisonous substances. In many instances, the poisons are not present in sufficient quantities to cause adverse effects in humans when only moderate contact or consumption is involved and cooking may destroy or

dissipate the substance. Some plants and fungi have substances that produce toxic effects in some organisms but not in others. Ordinary onions (*Allium cepa*), for example, occasionally poison horses or cattle yet are widely used for human food, and poison ivy (*Toxicodendron radicans*) or poison oak (*Toxicodendron diversilobum*) produce dermatitis in some individuals but not in others. Table A3.2 and Table A3.3 include plants and fungi that are native to, or cultivated in, the United States and Canada.

Medicinal Plants, Fungi, and Algae

Today's worldwide multibillion-dollar pharmaceutical industry is producing many different drugs that are saving lives—lives that otherwise would have been lost to disease as little as 50 years ago. Because of the discovery and development of these drugs, human life expectancies more than doubled during the twentieth century, and continue to increase even more during the present century. Unfortunately, however, thousands also die each year from the side effects and interactions of some of the prescription drugs. This, in part, has led to an increased interest in medicinal plants and fungi, which, with few exceptions when used in appropriate amounts, very rarely produce undesirable side effects. Like prescription drugs, however, medicines derived directly from plants need to have been tested in scientific studies that can readily be duplicated, despite the fact that they may have been in use since before the dawn of recorded history. A few purveyors of natural plant medicines have been unscrupulous in making unsubstantiated claims about their efficacy, and the Food and Drug Administration generally has prohibited putting claims of efficacy on the containers of such products. The FDA also spends a proportionately tiny amount of its research budget on testing natural plant medicines.

Natural plant medicines usually can't be patented, making financial incentives for needed research much less likely to be forthcoming than they are for the development of pharmaceutical drugs, which can be exceptionally profitable to

Table A3.1

Wild Edible Plants and Fungi

Organism	Scientific Name	Uses
Amaranth	<i>Amaranthus</i> spp.	Young leaves used like spinach; seeds ground with others for flour
Arrow grass	<i>Triglochin maritima</i>	Seeds parched or roasted (Caution: All other plant parts are poisonous)
Arrowhead	<i>Sagittaria latifolia</i>	Tubers used like potatoes
Balsamroot	<i>Balsamorhiza</i> spp.	Whole plant edible, especially when young, either raw or cooked
Basswood	<i>Tilia</i> spp.	Fruits and flowers ground together to make a paste that can serve as a chocolate substitute; winter buds edible raw; dried flowers used for tea
Bearberry (Kinnikinnick)	<i>Arctostaphylos uva-ursi</i>	Berries are edible but much more palatable when cooked
Bedstraw (Cleavers)	<i>Galium aparine</i>	Roasted and ground seeds make good coffee substitute
Beechnuts	<i>Fagus grandifolia</i>	Seeds used as nuts; oil extracted from seeds for table use
Biscuit root	<i>Lomatium</i> spp.	Roots eaten raw or dried and ground into flour; seeds edible raw or roasted
Bitterroot	<i>Lewisia rediviva</i>	Outer coat of the bulbs should be removed to eliminate the bitter principle; bulbs are then boiled or roasted
Blackberry (wild)	<i>Rubus</i> spp.	Fruits edible raw, in pies, jams, and jellies
Black walnut	<i>Juglans nigra</i>	Nut meats edible
Bladder campion	<i>Silene cucubalus</i>	Young shoots (less than 5 cm tall) cooked as a vegetable
Blueberry	<i>Vaccinium</i> spp.	Fruits edible raw, frozen, and in pies, jams, and jellies
Bracken fern	<i>Pteridium aquilinum</i>	Young uncoiling leaves (“fiddleheads”) cooked like asparagus; rhizomes also edible but usually tough (Caution: Evidence indicates that frequent consumption of bracken fern can cause cancer of the intestinal tract)
Broomrape	<i>Orobanche</i> spp.	Entire plant eaten raw or roasted
Bulrush (Tule)	<i>Scirpus</i> spp.	Roots and young shoot tips edible raw or cooked; pollen and seeds also edible
Butternut	<i>Juglans cinerea</i>	Nut meats edible
Camas	<i>Camassia quamash</i>	Roasted bulbs considered a delicacy
Caraway	<i>Carum carvi</i>	Young leaves in salads; seeds for flavoring baked goods and cheeses
Cattail	<i>Typha</i> spp.	Copious pollen produced by flowers in early summer is rich in vitamins and can be gathered and mixed with flour for baking; rhizomes can be cooked and eaten like potatoes
Chicory	<i>Cichorium intybus</i>	Leaves eaten raw or cooked; dried, ground roots (roasted) make good coffee substitute
Chokecherry	<i>Prunus virginiana</i>	Fruits make excellent jelly or can be cooked with sugar for pies and cobblers
Clover	<i>Trifolium</i> spp.	Roots edible
“Coffee” (wild)	<i>Triosteum</i> spp.	Berries dried and roasted make good coffee substitute
Common chickweed	<i>Stellaria media</i>	Plants cooked as a vegetable
Corn lily	<i>Clintonia borealis</i>	Youngest leaves can be used as a cooked vegetable
Cow parsnip	<i>Heracleum lanatum</i>	Roots and young stems cooked (Caution: Be certain of identity; some other members of the family that are similar in appearance to cow parsnip are highly toxic)
Cowpea	<i>Vigna sinensis</i>	“Peas” and young pods cooked as a vegetable (plant naturalized in southern U.S.)
Crab apple	<i>Pyrus</i> spp.	Jelly made from fruits
Cranberry (wild, bog)	<i>Vaccinium</i> spp.	Berries edible cooked, preserved, or in drinks; adding a small amount of salt while cooking significantly reduces amount of sugar needed to counteract acidity
Crowberry	<i>Empetrum nigrum</i>	Fruits should first be frozen, then cooked with sugar
Dandelion	<i>Taraxacum</i> sp. aff.	Leaves rich in vitamin A; dried roots make good coffee substitute; wine made from young flowers
Dock	<i>Rumex</i> spp.	Leaves cooked like spinach; tartness of leaves varies from species to species and sometimes from plant to plant—tart forms should be cooked in two or three changes of water
Douglas fir	<i>Pseudotsuga menziesii</i>	Cambium and young phloem edible; tea made from fresh leaves
Elderberry	<i>Sambucus</i> spp.	Fresh flowers used to flavor batters; fruits used in pies, jellies, wine (Caution: Other parts of the plant are poisonous)
Evening primrose	<i>Oenothera hookeri</i> , <i>O. biennis</i> , and others	Young roots cooked
Fairy bells	<i>Disporum trachycarpum</i>	Berries can be eaten raw
Fennel	<i>Foeniculum vulgare</i>	Leaf petioles eaten raw or cooked
Ferns	Most (but not all) spp.	Young coiled fronds (fiddleheads) may be cooked as a vegetable
Fireweed	<i>Epilobium angustifolium</i>	Young shoots and leaves boiled as a vegetable

Table A3.1

Wild Edible Plants and Fungi

Organism	Scientific Name	Uses
Fritillary	<i>Fritillaria</i> spp.	Cooked bulbs are edible
Ginger (wild)	<i>Asarum</i> spp.	Rhizomes can be used as substitute for true ginger
Gooseberry	<i>Ribes</i> spp.	Berries eaten cooked, dried, or raw; make excellent jelly
Grape (wild)	<i>Vitis</i> spp.	Berries usually tart but can be eaten raw; make good jams and jellies
Grass	Many genera and species	Seeds of most can be made into flour; rhizomes of many perennial species can be dried and ground for flour
Greenbrier	<i>Smilax</i> spp.	Roots dried and ground; refreshing drink made with ground roots, sugar, and water
Groundnut	<i>Apios americana</i>	Tubers cooked like potatoes
Hawthorn	<i>Crataegus</i> spp.	Fruits edible raw and in jams and jellies
Hazelnut	<i>Corylus</i> spp.	Nuts eaten raw or roasted
Hickory	<i>Carya</i> spp.	Nuts edible
Highbush cranberry	<i>Viburnum trilobum</i>	Fruits make excellent jellies and jams
Huckleberry	<i>Vaccinium</i> spp.	Berries eaten raw or in jams and jellies
Indian paintbrush	<i>Castilleja</i> spp.	Flowers of many species edible (Caution: On certain soils, plants absorb toxic quantities of selenium)
Indian pipe	<i>Monotropa</i> spp.	Whole plant edible raw or cooked
June berries	<i>Amelanchier</i> spp.	Fruit edible fresh, dried, or preserved
Juniper	<i>Juniperus</i> spp.	“Berries” dried, ground, and made into cakes
Labrador tea	<i>Ledum</i> spp.	Tea made from young leaves
Lamb’s quarters	<i>Chenopodium album</i>	Leaves and young stems used as cooked vegetable
Licorice	<i>Glycyrrhiza lepidota</i> , <i>G. glabra</i>	Roots edible raw or cooked
Mallow	<i>Malva</i> spp.	Leaves and young stems used as vegetable (use only small amounts at one time)
Manzanita	<i>Arctostaphylos</i> spp.	Berries eaten raw, in jellies or pies, or made into “cider” (Caution: Raw berries can be somewhat indigestible)
Maple	<i>Acer</i> spp.	Sugar maples (<i>Acer saccharum</i>) well known for the sugar content of the early spring sap; other species (e.g., box elder— <i>A. negundo</i> , bigleaf maple— <i>A. macrophyllum</i>) also contain usable sugars in their early spring sap
Mariposa lily	<i>Calochortus</i> spp.	Bulbs edible raw or cooked
Mayapple	<i>Podophyllum peltatum</i>	Fruit good raw or cooked (Caution: Other parts of the plant are poisonous)
Maypops	<i>Passiflora incarnata</i>	Fruits edible raw or cooked
Miner’s lettuce	<i>Claytonia perfoliata</i>	Leaves eaten raw as a salad green
Mint	<i>Mentha arvensis</i> and others	Leaves of several mints used for teas
Mormon tea	<i>Ephedra</i> spp.	Tea from fresh or dried leaves
Mulberry	<i>Morus</i> spp.	Fruits of the red mulberry (<i>M. rubra</i>) are used raw and in pies and jellies; fruits of white mulberry (<i>M. alba</i>) edible but insipid
Mushrooms	Many genera and species	Utmost caution should be exercised in identifying mushrooms before consuming them; although poisonous species are in the minority, they are common enough; edible forms that are relatively easy to identify include morels (<i>Morchella esculenta</i>), most puffballs (<i>Lycoperdon</i> spp.), and inky cap mushrooms (<i>Coprinus</i> spp.)
Mustard	<i>Brassica</i> spp.	Leaves used as vegetable; condiment made from ground seeds
Nettles	<i>Urtica</i> spp.	Leaves and young stems cooked like spinach
New Jersey tea	<i>Ceanothus americanus</i>	Tea from leaves
Nutgrass	<i>Cyperus esculentus</i> and others	Tubers can be eaten raw
Oak	<i>Quercus</i> spp.	Acorns were ground for flour and widely used by native North Americans; all contain bitter tannins that must be leached out before use
Onion (wild)	<i>Allium</i> spp.	Bulbs edible raw or cooked
Orach	<i>Atriplex patula</i> and others	Leaves and young stems cooked as a vegetable
Oregon grape	<i>Berberis aquifolia</i> , <i>B. nervosa</i>	Berries edible raw or preserved
Ostrich fern	<i>Matteuccia struthiopteris</i>	Young coiled fronds cooked as a vegetable
Pawpaw	<i>Asimina triloba</i>	Fruit edible raw or cooked
Pennycress	<i>Thlaspi arvense</i>	Young leaves are edible raw
Peppergrass	<i>Lepidium</i> spp.	Immature fruits add zest to salads; seeds spice up meat dressings
Persimmon	<i>Diospyros virginiana</i>	Fully ripened fruits can be eaten raw or cooked

Table A3.1

Wild Edible Plants and Fungi

Organism	Scientific Name	Uses
Pickeral weed	<i>Pontederia cordata</i>	Fruits edible raw or dried
Pigweed (see Amaranth)		
Pines	<i>Pinus</i> spp.	Cambium, young phloem, and seeds edible; tea from fresh needles rich in vitamin C
Pipsissewa	<i>Chimaphila umbellata</i>	Drink made from boiled roots and leaves (cool after boiling)
Plantain	<i>Plantago</i> spp.	Young leaves eaten in salads or as cooked vegetable
Poke	<i>Phytolacca americana</i>	Fresh young shoots boiled like asparagus (Caution: Older parts of plant are poisonous)
Prairie turnip	<i>Psoralea esculenta</i>	Turnip-like roots cooked like potatoes
Prickly pear	<i>Opuntia</i> spp.	Fruits and young stems peeled and eaten raw or cooked
Psyllium	<i>Plantago ovata</i>	Seed husks widely used as a bulking laxative
Purple avens	<i>Geum rivale</i>	Liquid from boiled root has chocolate-like flavor
Purslane	<i>Portulaca oleracea</i>	Leaves and stems cooked like spinach
Quackgrass	<i>Elytrigia repens</i>	Noxious weed whose rhizomes can be used as emergency food
Raspberry (wild)	<i>Rubus</i> spp.	Fruits edible raw or in pies, jams, and jellies
Redbud	<i>Cercis</i> spp.	Flowers used in salads; cooked young pods edible
River-beauty	<i>Epilobium latifolium</i>	Young shoots and fleshy leaves can be cooked as a vegetable
Rose (wild)	<i>Rosa</i> spp.	Fruits (hips) exceptionally rich in vitamin C; hips can be eaten raw, pureed, or candied
Salal	<i>Gaultheria procumbens</i> , <i>G. shallon</i>	Ripe berries edible raw, dried, or preserved
Salmonberry	<i>Rubus spectabilis</i>	Fruits edible raw, dried, or cooked
Salsify	<i>Tragopogon</i> spp.	Roots edible raw or cooked
Saltbush	<i>Atriplex</i> spp.	Seeds nutritious (Caution: On certain soils, plants can absorb toxic amounts of selenium)
Sassafras	<i>Sassafras albidum</i>	Tea from roots (Caution: Large quantities have narcotic effect); leaves and pith used for Louisiana filé
Serviceberry	<i>Amelanchier</i> spp.	All fruits edible (mostly bland)
Sheep sorrel	<i>Rumex acetosella</i>	Raw leaves have a pleasant sour taste; leaves can be used as seasoning in other dishes
Shepherd's purse	<i>Capsella bursa-pastoris</i>	Leaves cooked as vegetable; seeds eaten parched or ground for flour
Showy milkweed	<i>Asclepias speciosa</i>	Flowers eaten raw or cooked; young shoots cooked
Silverweed	<i>Potentilla anserina</i>	Cooked roots edible
Soap plant	<i>Chlorogalum pomeridianum</i>	Bulbs slow-baked and eaten like potatoes after fibrous outer coats are removed
Solomon's seal	<i>Polygonatum</i> spp.	Rootstocks dried and ground for bread flour
Sorrel	<i>Oxalis</i> spp.	Leaves mixed in salads
Spatterdock	<i>Nuphar polysepalum</i>	Seeds placed on hot stove burst like popcorn and are edible as such; peeled tubers eaten boiled or roasted
Speedwell	<i>Veronica americana</i> and others	Leaves and stems used in salads
Spring beauty	<i>Claytonia</i> spp.	Bulbs edible raw or roasted
Strawberry (wild)	<i>Fragaria</i> spp.	Fruits superior in flavor to cultivated varieties
Sunflower	<i>Helianthus annuus</i>	Seeds eaten raw or roasted; seeds yield cooking oil
Sweet cicely	<i>Osmorhiza</i> spp.	Roots have aniselike flavor
Sweet flag	<i>Acorus calamus</i>	Young shoots used in salads; roots candied
Thimbleberry	<i>Rubus parviflorus</i>	Fruits edible raw, cooked, dried, or preserved; dried leaves used for tea
Thistle	<i>Cirsium</i> spp.	Peeled stems edible; roots edible raw or roasted
Vetch	<i>Vicia</i> spp.	Tender green pods edible baked or boiled
Watercress	<i>Nasturtium officinale</i>	Leaves edible raw in salads or cooked as a vegetable
Waterleaf	<i>Hydrophyllum</i> spp.	Young shoots raw in salads; shoots and roots cooked as vegetable
Water plantain	<i>Alisma</i> spp.	The bulblike base of the plant is dried and then cooked
Water shield	<i>Brasenia schreberi</i>	Tuberlike roots are peeled and then dried to be ground for flour or boiled
Winter cress	<i>Barbarea</i> spp.	Leaves and young stem edible as cooked vegetable
Yarrow	<i>Achillea lanulosa</i>	Plant dried and made into broth (Caution: The closely related and widespread European yarrow—<i>A. millefolium</i>—is somewhat poisonous)
Yellow pond lily (see Spatterdock)		
Yew	<i>Taxus</i> spp.	Bright red pulpy part of berries edible (Caution: Seeds and leaves are poisonous)

Table A3.2

Plants and Fungi Known to Have Caused Human Fatalities

Organism	Scientific Name	Poisonous Parts
Angel's trumpet	<i>Datura suaveolens</i>	All parts, especially seeds and leaves
Azalea	<i>Rhododendron</i> spp.	Leaves and flowers (however, poisoning is rare)
Baneberry	<i>Actaea</i> spp.	Berries and roots
Belladonna	<i>Atropa belladonna</i>	All parts, especially fruits and roots
Black cherry	<i>Prunus serotina</i>	Bark, seeds, leaves (Caution: Seeds of most cherries, plums, and peaches contain a poisonous principle)
Black locust	<i>Robinia pseudo-acacia</i>	Seeds, leaves, inner bark
Black snakeroot	<i>Zigadenus</i> spp.	Bulbs
Buckeye	<i>Aesculus</i> spp.	Seeds, shoots, flowers, leaves, roots; even the honey that bees make from buckeye flowers is poisonous
Caladium	<i>Caladium</i> spp.	All parts
Carolina jessamine	<i>Gelsemium sempervirens</i>	All parts; even visiting honeybees can be poisoned
Castor bean	<i>Ricinus communis</i>	Seeds
Chinaberry	<i>Melia azedarach</i>	Fruits and leaves
Daphne	<i>Daphne mezereum</i>	All parts
Death angel (Fly agaric)	<i>Amanita muscaria</i>	All parts (as little as one bite can be fatal)
Death camas (see Black snakeroot)		
Destroying angel	<i>Amanita verna</i>	All parts (as little as one bite can be fatal)
Dieffenbachia (Dumb cane)	<i>Dieffenbachia</i> spp.	All parts
Duranta	<i>Duranta repens</i>	Berries
Dutchman's breeches	<i>Dicentra cucullaria</i>	All parts
English ivy	<i>Hedera helix</i>	Berries and leaves
False hellebore	<i>Veratrum</i> spp.	All parts
Foxglove	<i>Digitalis purpurea</i>	All parts
Gloriosa lily	<i>Gloriosa superba</i> and other <i>Gloriosa</i> spp.	All parts (especially tubers)
Golden chain	<i>Laburnum anagyroides</i>	Seeds and flowers
Jequirity bean	<i>Abrus precatorius</i>	Seeds
Jimson weed	<i>Datura stramonium</i> and other <i>Datura</i> spp.	All parts, especially seeds
Lantana	<i>Lantana camara</i>	Unripe fruits
Lily of the valley	<i>Convallaria majalis</i>	All parts
Lobelia	<i>Lobelia</i> spp.	All parts
Mistletoe	<i>Phoradendron</i> spp.	Berries
Monkshood	<i>Aconitum</i> spp.	All parts
Moonseed	<i>Menispermum canadense</i>	Fruits
Mountain laurel	<i>Kalmia latifolia</i>	Leaves, shoots, flowers
Mushrooms	Many genera and species, especially <i>Amanita</i> spp.	All parts
Nightshade	<i>Solanum</i> spp.	Unripened fruits (Caution: A poisonous principle is produced in common potato [<i>Solanum tuberosum</i>] tubers exposed to light long enough for the skins to turn green or greenish)
Oleander	<i>Nerium oleander</i>	All parts
Poison hemlock	<i>Conium maculatum</i>	All parts
Poke	<i>Phytolacca americana</i>	Roots and mature stems
Rhododendron (see Azalea)		
Rhubarb	<i>Rheum rhaponticum</i>	Leaf blades (Caution: Although young petioles are widely eaten, dangerous accumulations of a poisonous substance can occur in leaf blades)
Rubber vine	<i>Cryptostegia grandiflora</i>	All parts
Sandbox tree	<i>Hura crepitans</i>	Milky sap and seeds
Tansy	<i>Tanacetum vulgare</i>	Leaves, flowers
Tung tree	<i>Aleurites fordii</i>	All parts, especially seeds
Water hemlock	<i>Cicuta</i> spp.	Roots
White snakeroot	<i>Eupatorium rugosum</i>	All parts
Yellow oleander	<i>Thevetia peruviana</i>	All parts, especially fruits
Yew	<i>Taxus</i> spp.	All parts except "berry" pulp

Table A3.3

Other Organisms Producing Significant Quantities of Poisonous Substances

Organism	Scientific Name	Poisonous Parts
Amaryllis	<i>Amaryllis</i> spp.	Bulbs
Autumn crocus	<i>Colchicum autumnale</i>	All parts
Bittersweet	<i>Celastrus scandens</i>	Seeds
Bleeding hearts	<i>Dicentra</i> spp.	All parts
Bloodroot	<i>Sanguinaria canadensis</i>	All parts
Blue cohosh	<i>Caulophyllum thalictroides</i>	Fruits, leaves
Boxwood	<i>Buxus sempervirens</i>	Leaves
Buckthorn	<i>Rhamnus</i> spp.	Fruits
Bushman's poison	<i>Acokanthera</i> spp.	All parts
Buttercup	<i>Ranunculus</i> spp.	All parts; toxicity varies from species to species; mostly cause blistering
Buttonbush	<i>Cephalanthus occidentalis</i>	Leaves
Caladium	<i>Caladium</i> spp.	All parts
Carolina jessamine	<i>Gelsemium sempervirens</i>	All parts (even visiting honeybees can be poisoned)
Chincherinchee	<i>Ornithogalum thyrsoides</i>	All parts
Crown of thorns	<i>Euphorbia milii</i>	Milky latex
Culver's root	<i>Veronicastrum virginicum</i>	Root
Daffodil	<i>Narcissus</i> spp.	Bulbs
Desert marigold	<i>Baileya radiata</i>	All parts
Fly poison	<i>Amanthemum muscaetoxicum</i>	Leaves, roots
Four-o'clock	<i>Mirabilis jalapa</i>	Seeds, roots
Goldenseal	<i>Hydrastis canadensis</i>	Rhizomes, leaves
Holly	<i>Ilex aquifolium</i>	Berries
Horse chestnut	<i>Aesculus hippocastanum</i>	Seeds, flowers, leaves
Hyacinth	<i>Hyacinthus</i> spp.	Bulbs
Hydrangea	<i>Hydrangea</i> spp.	Buds, leaves
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>	Roots, leaves
Jessamine	<i>Cestrum</i> spp.	Leaves, young stems
Jonquil (see Daffodil)		
Karaka nut	<i>Corynocarpus laevigata</i>	Seeds
Kentucky coffee tree	<i>Gymnocladus dioica</i>	Fruits
Larkspur	<i>Delphinium</i> spp.	Young plants, seeds
Lignum vitae	<i>Guaiacum officinale</i>	Fruits
Locoweed	<i>Astragalus</i> spp.	Location of poisonous principles varies from species to species; plants more of a problem for livestock than for humans
Lupine	<i>Lupinus</i> spp.	Location of poisonous principles varies from species to species; primarily in pods and seeds
Marijuana	<i>Cannabis sativa</i>	Resins secreted by glandular hairs among flowers
Mayapple	<i>Podophyllum peltatum</i>	All parts except ripe fruits
Mescal bean	<i>Sophora secundiflora</i>	Seeds
Narcissus (see Daffodil)		
Ngaio	<i>Myoporum laetum</i>	Leaves
Opium poppy	<i>Papaver somniferum</i>	Unripe fruits
Philodendron	<i>Philodendron</i> spp.	Leaves, stems
Pittosporum	<i>Pittosporum</i> spp.	Fruits, leaves, stems
Poinsettia	<i>Euphorbia pulcherrima</i>	Milky latex
Poison hemlock	<i>Conium maculatum</i>	All parts
Poison ivy	<i>Toxicodendron radicans</i>	Leaves
Poison oak	<i>Toxicodendron diversilobum</i>	Leaves
Poison sumac	<i>Toxicodendron vernix</i>	Leaves
Poke	<i>Phytolacca americana</i>	Roots, leaves, stems (uncooked fruits may be slightly poisonous)
Prickly poppy	<i>Argemone</i> spp.	Seeds, leaves
Privet	<i>Ligustrum vulgare</i>	Fruits
Rhododendron	<i>Rhododendron</i> spp.	All parts
Sneezeweed	<i>Helenium</i> spp.	All parts
Snow-on-the-mountain	<i>Euphorbia marginata</i>	Milky latex
Squirrel corn	<i>Dicentra canadensis</i>	All parts
Star-of-Bethlehem	<i>Ornithogalum umbellatum</i>	All parts
Sweet pea	<i>Lathyrus</i> spp.	Seeds
Tobacco	<i>Nicotiana tabacum</i>	Leaves (when eaten)
Water hemlock	<i>Cicuta</i> spp.	All parts

investors. Also, plants can vary widely in the amounts of medicines they produce. Responsible persons involved in the growing, harvesting, and marketing of medicinal plants recognize not only the necessity for scientific testing of their products, but the additional need to standardize medicinal plant products sold for human use. A number of medicinal plant products are already standardized before they are sold, and many others will be in the future.

Positive responses to medicinal plant substances and extracts for specific ailments are often much slower than they are to prescription medicines, and one might ask why, then, one might want to use them alternatively in some instances. The expense, and sometimes dangerous side effects, of prescription medicines, are obvious answers, but there are other less obvious reasons. Prescription medicines invariably are specific drugs produced in pure, isolated form. Natural plant medicines, however, almost always are a combination of various chemicals, with many often having a synergistic effect (i.e., the combination works better than a single isolated component by itself). In fact, in Chinese and East Indian (Ayurvedic) medicine, which have been practiced for thousands of years, various combinations of medicinal

plants usually are prescribed, primarily because of the synergistic effects.

Table A3.4 includes a sampling of plants, algae, fungi, and bacteria associated with past and some present medicinal uses. Some of the drugs concerned are prescribed for specific ailments by modern medical practitioners, whereas others are a part of folk medicine still practiced in mostly nonurban areas. **Caution:** *Do not use any of the plants, algae, fungi, or bacteria listed here for medicinal purposes without consulting a reputable, qualified health practitioner.*

The following groups of plants or plant derivatives have been used to treat memory and cholesterol problems. The reader should be aware that the human tendency to produce bad cholesterol varies considerably with the individual's heredity, as well as the types of food consumed. If an individual consumes a food known to contain relatively high amounts of cholesterol (e.g., eggs) it does not necessarily follow that the individual's bad cholesterol level will then increase, nor does removal of the cholesterol-containing food necessarily result in the lowering of bad cholesterol levels. Nevertheless, there are some plants or plant derivatives that have been demonstrated to aid in reduction of human bad cholesterol levels.

Table A3.4

Plants, Algae, Fungi, and Bacteria Associated with Medicinal Uses

Organism	Scientific Name	Uses
Agrimony	<i>Agrimonia</i> spp.	High silica content makes aerial parts of plant useful as an astringent to stop bleeding
Alfalfa	<i>Medicago sativa</i>	Leaf concentrates shown to promote desirable balance between LDL and HDL cholesterol levels
Aloe	<i>Aloe</i> spp. (esp. <i>Aloe vera</i>)	Juice from leaves contains chrysophanic acid, which promotes healing of burns; used for relief of constipation
American mountain ash	<i>Pyrus americana</i>	Liquid made from steeping inner bark in water used as an astringent; tea of berries used as a wash for hemorrhoids; berries eaten to prevent or cure scurvy
<i>Anemarrhena asphodelioides</i> (see Chinese lily)		
Anemone	<i>Anemone canadensis</i>	Pounded boiled root applied to wounds as an antiseptic
Angelica	<i>Angelica archangelica</i>	Fruits used in treating colds and fevers; leaves used to stimulate appetite
<i>Angelica dahurica</i> (see Dahurian angelica)		
<i>Angelica polymorpha</i> (see Chinese angelica)		
Anise	<i>Pimpinella anisum</i>	Seed oil used to relieve indigestion, colds, and respiratory problems such as sinusitis
<i>Apocynum androsaemifolium</i> (see Dogbane, bitter)		
<i>Apocynum venetium</i> (see Dogbane, venetian)		
Apple	<i>Malus domestica</i>	Source of polyphenols and enzyme inhibitors that exhibit antioxidant and bactericidal activity (e.g., against gingivitis bacteria), especially when working in concert with bioflavonoids
Apricot	<i>Prunus armeniaca</i>	Seed extract said to function as a bronchodilator
Arnica	<i>Arnica</i> spp.	Plants applied as a poultice to bruises and sprains
Ashwagandha	<i>Withania somnifera</i>	Reported to have multiple immune system-boosting effects as well as alleviating menopausal symptoms
Asian epimedium	<i>Epimedium grandiflorum</i>	Plant extracts are said to have a stimulatory, hormone-like effect on the prostate gland and testes
Asian skullcap	<i>Scutellaria baicalensis</i>	Plant extracts contain flavonoids and antioxidants; some components function together as a bronchodilator and bactericide; they also reduce blood pressure and LDL cholesterol levels

Table A3.4

Plants, Algae, Fungi, and Bacteria Associated with Medicinal Uses

Organism	Scientific Name	Uses
Asparagus, wild	<i>Asparagus racemosus</i>	Root flavonoid extracts used to relieve menopausal problems
Astragalus	<i>Astragalus</i> spp.	Root extracts used to boost the immune system; said to be good for colds, flu, and immune-deficiency disorders; also lowers blood pressure. (Caution: Some <i>Astragalus</i> spp. sequester toxic amounts of selenium; should not be taken if a fever is present)
<i>Astragalus membranaceus</i> (see Membranous milk vetch)		
<i>Atractylodes lancea</i> (see Southern tsangshu)		
<i>Atractylodes macrocephala</i> (see Southern tsangshu)		
Balm of Gilead	<i>Populus x gileadensis</i>	Buds used as an ingredient in cough syrup
Balsam poplar	<i>Populus balsamifera</i>	Buds made into ointment, which Native Americans placed in nostrils for relief of congestion
Barberry	<i>Berberis vulgaris</i>	Slows heartbeat rate
Beefsteak plant (see Perilla)		
Bifidobacteria	<i>Bifidobacterium bifidum</i> (<i>Helicobacter pylori</i> , <i>B. breve</i> , <i>B. infantis</i> , <i>B. longum</i> , and others)	Bifidobacteria destroy the bacteria that cause ulcers in humans
Bilberry/Blueberry	<i>Vaccinium</i> spp.	Evidence that regular consumption of fruit, which contains more than a dozen anthocyanosides, increases oxygen flow to eyes, slowing progression of cataracts, glaucoma, and macular degeneration; helps to balance insulin levels
Bitter melon	<i>Momordica charantia</i>	Plant extracts promote increased insulin production and are believed to reduce sugar damage to pancreatic cells
Bittersweet nightshade	<i>Solanum dulcamara</i>	Plant extracts used to treat skin problems such as acne, eczema, and boils. (Caution: The fruits and other plant parts are poisonous)
Blackberry	<i>Rubus</i> spp.	Tea of roots used by northern California Native Americans to cure dysentery
Black cohosh	<i>Cimicifuga racemosa</i>	Dried rhizomes used in cough medicines and for rheumatism; counters effects of declining estrogen levels in women (e.g., hot flashes, sleep disturbances); alleviates urinary tract problems
Black currant	<i>Ribes nigrum</i>	Oil from seeds used to improve suppleness of skin and to reduce skin dryness
Black haw	<i>Viburnum prunifolium</i>	Bark used in treatment of asthma and for relieving menstrual irregularities
Bloodroot	<i>Sanguinaria canadensis</i>	Native Americans used rhizome for ringworm, as an insect repellent, and for sore throat
Blue cohosh	<i>Caulophyllum thalictroides</i>	Tea of root drunk by Native Americans and early settlers a week or two before giving birth to promote rapid parturition
Boneset	<i>Eupatorium perfoliatum</i>	Water infusion of dried plant tops widely used to treat fevers and colds
Borage	<i>Borago officinalis</i>	Oil from seeds contains gamma linoleic acid (GLA) and other oils beneficial in human nutrition
Boswellia	<i>Boswellia serrata</i>	Extract of resin from this East Indian tree inhibits substances that cause joint swelling
Broom snakeweed	<i>Gutierrezia sarothrae</i>	Navajo Indians applied chewed plant to insect stings and bites of all kinds
Buckthorn	<i>Rhamnus catharticus</i>	Fruits used as a laxative
<i>Bupleurum chinense</i> (see Chinese thoroughwax)		
Burdock	<i>Arctium lappa</i>	Used as an insulin substitute in folklore; root extract used in 17th century for venereal diseases
Butcher's broom	<i>Ruscus aculeatus</i>	Plant extracts shown in clinical trials to strengthen capillaries and to relieve hemorrhoid symptoms; improve flow of blood to the hands and feet
Button snakeroot	<i>Eryngium</i> spp.	Natchez Indians inserted chewed stem in nostrils to arrest nosebleed
Cajuput	<i>Melaleuca cajuputi</i>	Oil obtained from leaves and twigs is used in treatment of muscular pain and as an antiseptic
California bay	<i>Umbellularia californica</i>	Yuki Indians put leaves in bath of hot water and bathed for relief of rheumatism; leaves used as an insect repellent
Camphor	<i>Cinnamomum camphora</i>	Oil from leaves and wood used in cold remedies and liniments

Table A3.4

Plants, Algae, Fungi, and Bacteria Associated with Medicinal Uses

Organism	Scientific Name	Uses
Camptotheca	<i>Camptotheca acuminata</i>	Extracts from flowers and immature fruits yield camptothecin, which has given evidence of being effective against certain forms of cancer
Cardamon	<i>Elettaria cardamomum</i>	Seed oil has antibiotic properties and is used in treatment of colds, coughs, and other respiratory problems
Cascara	<i>Rhamnus purshiana</i>	Bark extract widely used as a laxative
Catnip	<i>Nepeta cataria</i>	Leaf tea used for treatment of colds and to relieve infant colic
Cat's claw	<i>Uncaria tomentosa</i>	Root bark extracts used in treatment of intestinal problems, including diverticulosis and Crohn's disease; extracts also shown to have anti-inflammatory properties; hirsutin component lowers blood pressure; rhynchophylline (alkaloid) inhibits clumping of blood platelets and has been shown in animals to increase brain serotonin levels
Cayenne pepper	<i>Capsicum frutescens</i>	Used to reduce mucous drainage (recent evidence, however, suggests it may be carcinogenic); capsaicin extracts used in ointments to relieve pains of arthritis and neuropathy; aids digestion
Celery	<i>Apium graveolens</i>	Seed contains an essential oil that acts like an antioxidant that fights free radicals that attack joints; oil believed to have sedative properties
Chamomile	<i>Chamaemelum nobile</i>	Tea used as a digestive aid
Chaste tree	<i>Vitex agnus-castus</i>	Extract of berries reduces symptoms of premenstrual syndrome
Chaulmoogra	<i>Hydnocarpus</i> spp.	Seed oil used in the treatment of skin diseases such as eczema, psoriasis, and leprosy
Cherry (wild)	<i>Prunus serotina</i>	Tea brewed from bark used for coughs and colds
Chia	<i>Salvia columbariae</i>	Mucilaginous seeds used by Spanish Californians to make a refreshing drink; seeds contain a caffeine-like principle that enabled Native Americans to perform unusual feats of endurance; seed paste used in eye irritated by foreign matter
Chinese angelica	<i>Angelica polymorpha</i>	Root extracts used to suppress or relieve asthma
Chinese cinnamon	<i>Cinnamomum cassia</i>	Pulverized bark ingested to improve urinary flow and reduce more than normal frequencies of urination
Chinese club moss	<i>Lycopodium serratum</i>	Source of an alkaloid (huperzine A) that inhibits destruction of acetylcholine involved in nerve transmissions, and thereby enhances memory
Chinese lily	<i>Anemarrhena asphodelioides</i>	Plant extracts apparently can aid in controlling blood glucose levels, hay fever, dermatitis, and other allergic symptoms; rhizome extracts used to quench thirst caused by fevers
Chinese magnolia	<i>Magnolia officinalis</i> , <i>Magnolia quinquepeta</i>	Bark extracts used to reduce nasal stuffiness and discharge, to drain sinuses, and to alleviate asthma and sinus headaches
Chinese rubber tree	<i>Eucommia ulmoides</i>	Bark extract improves circulation to the hands and feet; reduces high blood pressure; alleviates frequent urination problems
Chinese thoroughwax	<i>Bupleurum chinense</i>	Root extracts found to have general calming effect and to promote sound sleep; usually used in combination with other herbal extracts
Chlorella	<i>Chlorella</i> spp.	Green algae that boost the immune system, relieve constipation, and can remove heavy metals from food
Chocolate	<i>Theobroma cacao</i>	Seed extracts are good source of L-arginine and magnesium and are believed (when combined with other chocolate constituents) to elevate serotonin levels; chocolate also contains theobromin (somewhat similar to caffeine in action) and phenylethylene, which are believed to produce sustained elevation of mood (Note: These attributes pertain primarily to chocolate that does not have milk, sugar, or other products added to it)
<i>Chrysanthemum indicum</i> (see Indian chrysanthemum)		
Cinchona	<i>Cinchona</i> spp.	Bark yields quinine drugs used in treating malaria
Cinquefoil (Eurasian)	<i>Potentilla erecta</i>	Dried rhizome used to control diarrhea
Club moss	<i>Lycopodium clavatum</i>	Spores dusted on wounds or inhaled by Native Americans to arrest nosebleeds
Coca	<i>Erythroxylon coca</i>	Cocaine from leaves used as a local anesthetic; South American laborers use it as a stimulant
Cola	<i>Cola nitida</i> , <i>C. acuminata</i>	Seeds contain up to 3.5% caffeine and 1% theobromine, which may lessen fatigue

Table A3.4

Plants, Algae, Fungi, and Bacteria Associated with Medicinal Uses

Organism	Scientific Name	Uses
Coleus	<i>Coleus for skoolii</i>	Plant extracts used in treatment of hypertension, allergies, glaucoma, and psoriasis
Cordyceps	<i>Cordyceps sinensis</i>	This fungus, which parasitizes caterpillars, apparently alleviates respiratory problems and elevates phagocyte action
Cornsilk	<i>Zea mays</i>	Cornsilk extracts used for centuries as a diuretic
Corydalis	<i>Corydalis turtchaninovii</i>	One isolate of several produced by the plant has multiple anti-inflammatory and calming effects; it has been used to relieve joint pain (Note: This plant also produces poisonous alkaloids)
Cotton	<i>Gossypium</i> spp.	Cotton root “bark” used by black slaves and Native Americans to induce abortions
Cranberry	<i>Vaccinium oxycocum</i>	Fruit juice drunk to treat female yeast infections
Creosote bush	<i>Larrea divaricata</i>	Decoction from leaves used as a cure-all by Native Americans but especially for respiratory problems
Cubebs	<i>Piper cubeba</i>	Dried fruit best known as a condiment but is also used in treatment of asthma
Cynanchum	<i>Cynanchum</i> spp.	Plant extracts of these relatives of milkweeds are said to reduce mucous congestion of the lungs
Dahurian angelica	<i>Angelica dahurica</i>	Plant extracts used to treat allergy symptoms
Damiana	<i>Turnera diffusa</i>	Dried leaves used for minor pain, as a laxative, as a flavoring for a liqueur, and as a sexual stimulant; also said to improve blood circulation
Dandelion	<i>Taraxacum</i> sp. aff.	Root extracts said to stimulate the liver and facilitate its natural functioning in detoxification
Deadly nightshade	<i>Atropa belladonna</i>	Belladonna, a drug complex extracted from leaves, contains the drugs atropine, hyoscyamine, and scopolamine; these are used as an opium antidote, for shock treatments, and for dilation of pupils; scopolamine is also used as a tranquilizer and for “twilight sleep” in childbirth
Devil’s claw	<i>Harpagophytum procumbens</i>	Tuber extracts reported to have anti-inflammatory and pain-relieving properties
Di-huang (see Rehmannia)		
Dogbane, bitter	<i>Apocynum androsaemifolium</i>	Roots boiled in water and resulting liquid used as a heart medication (contains a drug similar in action to digitalis)
Dogbane, venetian	<i>Apocynum venetium</i>	Leaves smoked for bronchitis relief; extracts lower blood pressure
Dogwood	<i>Cornus</i> spp.	Inner bark boiled in water and resulting liquid drunk to reduce fevers
Dong quai	<i>Angelica sinensis</i>	Root extracts (which contain flavonoids) used in the alleviation of hot flashes and other menopausal symptoms; also used to treat premenstrual syndrome
Echinacea	<i>Echinacea purpurea</i>	Leaves and roots have antiviral and anti-inflammatory properties; used to boost the immune system
Elderberry	<i>Sambucus</i> spp.	Source of Sambucol, which is reported to have antiviral properties, especially in controlling those viruses involved in the common cold
Ephedra	<i>Ephedra</i> spp.	Drug ephedrine, widely used to relieve nasal congestion and low blood pressure; obtained from inner bark, berries, flowers, leaves (most ephedrine now in use is synthetic); also known as ma huang (Caution: Stems contain toxic amounts of cyanide)
<i>Epimedium grandiflorum</i> (see Asian epimedium)		
Ergot	Source: <i>Claviceps purpurea</i> on cereal grains	Used to treat migraine headaches and to control bleeding after childbirth
Eucalyptus	<i>Eucalyptus</i> spp.	Oil extracted from leaves used to alleviate bronchitis and coughs
<i>Eucommia ulmoides</i> (see Chinese rubber tree)		
European birch	<i>Betula pendula</i>	Oil distilled from bark and leaves used in treatment of kidney stones and urinary tract infections
Evening primrose	<i>Oenothera</i> spp.	Seeds are source of GLA oils beneficial in human nutrition
Eyebright	<i>Euphrasia officinalis</i>	Plant extracts used as an eyewash and in the relief of allergic itching of the eyes
Fennel	<i>Foeniculum vulgare</i>	Extracts of roots, stems, and fruits used as an appetite suppressant and as an eyewash

Table A3.4

Plants, Algae, Fungi, and Bacteria Associated with Medicinal Uses

Organism	Scientific Name	Uses
Fenugreek	<i>Trigonella foenum-graecum</i>	Seeds used in bulking laxatives; reduces mucus resulting from asthma and sinus problems; reduces skin inflammation
Feverfew	<i>Chrysanthemum parthenium</i>	Dried flowers used in treatment of migraine headaches, to induce abortion and menstruation, and as an insecticide; dilutes bronchial mucus; keeps body from producing histamines
Field mint	<i>Mentha arvensis</i>	Oil distilled from aerial parts of plants used to alleviate symptoms of colds, fevers, bronchitis; also used as an antiseptic
Flax	<i>Linum usitatissimum</i>	Cold-processed seed oils are rich source of gamma linoleic acid (GLA), beneficial in human nutrition, and in suppressing or reversing atherosclerosis; crushed seeds used as a laxative and for treating bronchial problems
Flowering ash	<i>Chionanthus virginicus</i>	Bark used as a laxative and in treatment of liver ailments
Forsythia	<i>Forsythia suspensa</i>	Plant extract has anti-inflammatory properties; is used to relieve sinus congestion and headaches
Foxglove	<i>Digitalis purpurea</i>	Drug digitalis, widely used as a heart stimulant, obtained from leaves
Frankincense	<i>Boswellia serrata</i>	Used to reduce joint pain and stiffness
Gambir	<i>Uncaria rhyncophylla</i>	Experimentally shown to relax blood vessels
Garlic	<i>Allium sativum</i>	Evidence that allicin and other sulfur-containing compounds extracted from bulbs inhibit common cold and other viruses; decreases artery-plugging fibrin levels, and regular consumption appears to enhance general cardiovascular health, including the lowering of LDL cholesterol levels and the inhibition of blood platelet clumping; the risk of stomach cancer also appears to be lowered
Gastrodia orchid	<i>Gastrodia elata</i>	Used in treating epilepsy and blood circulation problems; glucosides lower blood pressure
Gentian	<i>Gentiana catesbaei</i>	Catawba Indians applied hot-water extract of roots to sore backs; liquid drunk as a remedy for stomach aches; aids digestion and boosts circulation
Geranium (wild)	<i>Geranium maculatum</i>	Dried roots used for dysentery, diarrhea, and hemorrhoids
Ginger	<i>Zingiber officinale</i>	Powerful antioxidant; aids digestion and reduces nausea (including that of motion sickness); helps promote normal bladder control
Ginger (wild)	<i>Asarum</i> spp.	Extract of rhizome used as a broad-spectrum antibiotic
Ginkgo	<i>Ginkgo biloba</i>	Concentrated leaf extract improves oxygen-carrying capacity of capillaries, especially those of the brain, and may improve memory; used for treating vertigo and tinnitus
Ginseng (see also Siberian ginseng)	<i>Panax</i> spp.	Considered a general panacea, especially in Asia; strengthens the reproductive and adrenal glands; said to increase stamina
Globe artichoke	<i>Cynara scolymus</i>	Leaf and root extract used to inhibit gallstone formation and to alleviate digestion problems
Goldenrod	<i>Solidago canadensis</i>	Inflorescences used in the treatment of kidney stones and urinary tract infections
Goldenseal	<i>Hydrastis canadensis</i>	Rhizome source of alkaloidal drugs used in treatment of inflamed mucous membranes; also used as a tonic (Note: Pregnant women should not use goldenseal)
Goldthread	<i>Coptis groenlandica</i>	Native Americans boiled plant and gargled the liquid for sore or ulcerated mouths
Gotu kola	<i>Centella asiatica</i>	Shown in clinical trials to reduce swelling of ankles, generally improve blood circulation, and accelerate healing of wounds
Grape	<i>Vitis vinifera</i>	Seed extract source of powerful antioxidants (including quercetin) that also improve blood flow to the retina, thereby retarding macular degeneration; red grapes in particular produce significant amounts of resveratrol, which has been demonstrated to enhance enzyme activity associated with the regeneration and stimulation of nerve cells
Grapefruit	<i>Citrus × paradisi</i>	Seed extract used to combat bacterial or fungal infections
Green hellebore	<i>Helleborus viridis</i>	Plant extract used to treat hypertension (drug now synthesized); Thompson Indians used plant in small amounts to treat syphilis

Table A3.4

Plants, Algae, Fungi, and Bacteria Associated with Medicinal Uses

Organism	Scientific Name	Uses
Green tea	<i>Camellia sinensis</i>	Unfermented leaves source of polyphenols, which appear to reduce incidence of cancers in regular users through neutralization of free radicals; epigallocatechin gallate (EGCG) ingredient of green tea demonstrated by the Mayo Clinic to be particularly effective in control of prostate cancer
Gum plant	<i>Grindelia camporum</i>	Liquid from freshly and briefly boiled plants effective in treating poison oak and poison ivy rashes; used in treatment of coughs
Gymnema	<i>Gymnema sylvestre</i>	Extracts used to stabilize insulin levels in diabetics
Gynostemma	<i>Gynostemma pentaphylla</i>	Chinese plant related to melons; extracts believed to stimulate the immune system and aid in metabolism of fats that contribute to strokes
Hawthorn	<i>Crataegus oxycantha</i>	Anti-inflammatory that lowers LDL cholesterol levels; dilates coronary blood vessels
Hemlock	<i>Tsuga</i> spp.	Native Americans made tea of inner bark to treat colds and fevers (<i>Note: Do not confuse this tree with poison hemlock [Cicuta spp.]</i>)
Hops	<i>Humulus lupulus</i>	Extracts are sedative and used in treating insomnia and nervous tension
Horehound	<i>Marrubium vulgare</i>	Extract from dried tops of plants used in lozenges for relief of sore throats and colds; dilutes mucus in bronchial tubes
Horse chestnut	<i>Aesculus hippocastanum</i>	Seed and leaf extracts used to improve blood flow; night cramps of legs; reduce varicose veins and leg swelling (Caution: Plant is poisonous and only standardized extracts of demonstrated therapeutic value should be used; a coumarin component of horse chestnut leaves can interact adversely with aspirin and other anticoagulants)
Horseradish	<i>Armoracia rusticana</i>	Roots used to treat infections of the urinary tract
Horsetail	<i>Equisetum</i> spp.	Plants boiled in water; liquid used as a delousing hairwash or as a gargle for mouth ulcers
<i>Huperzia serrata = Lycopodium serratum (see Chinese club moss)</i>		
Hydrangea	<i>Hydrangea paniculata</i>	Essential oil from roots acts as diuretic (Caution: Leaves contain toxic amounts of cyanide)
<i>Hypericum perforatum (see St. John's wort)</i>		
Indian chrysanthemum	<i>Chrysanthemum indicum</i>	Glucoside extract said to lower blood pressure
Indigo (wild)	<i>Baptisia tinctoria</i>	Native Americans boiled plant and used liquid as an antiseptic for skin sores
Ipecac	<i>Cephaelis ipecacuana</i>	Drug from roots and rhizome used to treat amoebic dysentery; also used as an emetic
Java plum	<i>Syzygium cumini</i>	Powdered seeds used to counter excessive thirst and excretion of sugar in the urine, characteristic of diabetics
Jimson weed	<i>Datura</i> spp.	Drugs atropine, hyoscyamine, and scopolamine obtained from seeds, flowers, and leaves; drug stramonium used for knockout drops and in treatment of asthma (Caution: Jimson weeds are highly poisonous [see Deadly nightshade])
Joe-pye weed	<i>Eupatorium purpureum</i>	Dried root said to prevent formation of gallstones
Joshua tree	<i>Yucca brevifolia</i>	Cortisone and estrogenic hormones made from saponin produced in the roots
Jujube	<i>Ziziphus jujuba</i>	Fruit extracts shown to promote restful sleep and to aid in balancing irregular heartbeat
Juniper	<i>Juniperus</i> spp.	Tea of "berries" drunk by Zuni Indian women to relax muscles following childbirth (Caution: Internal consumption can interfere with absorption of iron and other minerals)
Kansas snakeroot	<i>Echinacea angustifolia</i>	Dried roots used as antiseptic in treatment of sores and boils, periodontal disease, and sinus drainage problems
Kava kava	<i>Piper methysticum</i>	Leaf tea used as a sedative, as a muscle relaxant, and as a pain reliever
Kirilow's cucumber	<i>Trichosanthes kirilowii</i>	Used to inhibit mucous production in the lungs
Lactobacillus	<i>Lactobacillus acidophilus</i> , <i>L. rhamnosus</i> , <i>L. salivarius</i> , and others	Lactobacilli normally populate the gastrointestinal tract, where they function in various ways to boost the immune system and destroy pathogenic bacteria; antibiotics destroy these useful bacteria, and repopulation is facilitated by ingestion of lactobacilli capsules or products such as yogurt, which contain the useful bacteria

Table A3.4

Plants, Algae, Fungi, and Bacteria Associated with Medicinal Uses

Organism	Scientific Name	Uses
Lemon balm	<i>Melissa officinalis</i>	Leaf extracts and oils used for colds
Licorice	<i>Glycyrrhiza glabra</i>	Rhizomes source of licorice used in cough drops and for the soothing of inflamed mucous membranes; stimulates interferon production; relieves allergic symptoms; boosts immune system; deglycyrrhizinated licorice increases protection of upper digestive tracts by augmenting the mucous coating (Caution: Undeglycyrrhizinated licorice can elevate blood pressure)
Ligusticum	<i>Ligusticum wallichii</i>	Extract has been demonstrated to relax blood vessels
Lily of the valley	<i>Convallaria majalis</i>	All parts of plant contain a heart stimulant similar to digitalis; used to control irregular heartbeat (Caution: Plants are poisonous)
Lilyturf plant	<i>Ophiopogon japonicus</i>	Root extracts said to aid in diluting thick mucous secretions in the lungs
Lobelia	<i>Lobelia inflata</i>	Drug lobeline sulfate obtained from dried leaves; drug used in preparations to aid in cessation of smoking and in treatment of respiratory disorders (Caution: Has effects similar to those of nicotine; more than 10 grams [one-third ounce] of dried plant can produce a coma)
<i>Lycopodium serratum</i> (see Chinese club moss)		
Maca	<i>Lepidium meyenii</i>	Root extracts said to elevate testosterone levels and improve sexual performance in men
Madagascar periwinkle	<i>Catharanthus roseus</i>	A semisynthetic extract (vinpocetine) derived from vincamine produced by this plant said to be a significant memory enhancer
Magnolia vine	<i>Schisandra chinensis</i>	Plant extracts contain a powerful antioxidant that appears to protect healthy tissues (liver in particular) from damage caused by higher-than-normal blood sugar levels. Synergistic effect when combined with ginseng
Ma huang (see Ephedra)		
Maitake mushrooms	<i>Grifola frondosa</i>	A substance (beta-glucan) produced by these mushrooms evidently stimulates the production of cells that aid in the inhibition of cancer cells
Malabar kino	<i>Pterocarpus marsupium</i>	Leaf extracts contain epicatechin, which promotes oxygen uptake and better processing of sugar by body tissues
Mandrake	<i>Mandragora officinarum</i>	Extracts of plant used in folk medicine as a painkiller (drugs hyoscyamine, podophyllin, and mandragorin have been isolated; podophyllin used experimentally in treatment of paralysis)
Mangosteen	<i>Garcinia mangostana</i>	Fruit acid is believed to aid in weight reduction
Manroot	<i>Marah</i> spp.	Native Americans used oil from seeds to treat scalp problems and the crushed roots for relief from saddle sores
Marginal fern	<i>Dryopteris marginalis</i>	Rhizomes contain oleoresin used in expulsion of tapeworms from the intestinal tract
Marijuana	<i>Cannabis sativa</i>	Tetrahydrocannabinol obtained from resinous hairs in inflorescences; ancient medicinal drug of China
Mayapple	<i>Podophyllum peltatum</i>	Podophyllin obtained from rhizomes used experimentally in treatment of paralysis; dried rhizome powder used on warts (Caution: Plant is poisonous, and extracts are very irritating to the skin)
Maypop	<i>Passiflora incarnata</i>	Dried leaves used as sedative; Native Americans used juice as treatment for sore eyes
Melia	<i>Melia toosendan</i>	Used in traditional Chinese medicine to relieve joint pain
Membranous milk vetch	<i>Astragalus membranaceus</i>	Extracts strengthen the immune system, especially that of the upper respiratory tract; promote interferon production and repair of damaged bronchial tubes; there is evidence it can counter bone loss (osteoporosis) resulting from extended use of corticosteroids (Caution: Some other <i>Astragalus</i> spp., also known as milk vetch, are toxic)
Mesquite	<i>Prosopis glandulosa</i>	Native Americans mixed dried leaf powder with water and used liquid to treat sore eyes
Mexican yam	<i>Dioscorea floribunda</i>	Tuberous roots produce up to 10% diosgenin, a precursor of progesterone and cortisone, and are a source of DHEA (dihydroepiandrosterone), a complex hormone naturally produced by humans; DHEA levels decline with aging; there is some evidence that controlled DHEA supplementation in older persons retards some aspects of aging
Milk thistle	<i>Silybum marianum</i>	Silymarin extracted from plants has antioxidant properties that appear to be especially beneficial to the liver
Milk vetch (see <i>Astragalus</i>)		

Table A3.4 **Plants, Algae, Fungi, and Bacteria Associated with Medicinal Uses**

Organism	Scientific Name	Uses
Milkweed	<i>Asclepias syriaca</i>	Quebec Indians promoted temporary sterility by drinking infusion of pounded roots
Mistletoe	<i>Phoradenron flavescens</i>	Native Americans reported to use small amounts as a contraceptive and sedative (Caution: Plants are toxic and should not be taken internally)
Monkshood	<i>Aconitum napellus</i>	Source of aconite once used in treatment of rheumatism and neuralgia (Caution: Plant is highly toxic)
Mormon tea (see Ephedra)		
Muira puama	<i>Ptychopetalum olacoides</i>	Leaf extracts said to stimulate hormone production and improve circulation; some consider it to be an aphrodisiac
Mukul myrrh	<i>Commiphora mukul</i>	Resin from tree stabilizes cholesterol levels and reduces osteoarthritis pain
Mulberry (red)	<i>Morus rubra</i>	Rappahannock Indians applied milky latex of leaf petioles to scalp to control ringworm
Mulberry (white)	<i>Morus alba</i>	Bark extract said to function as a bronchodilator
Mullein	<i>Verbascum thapsus</i>	Native Americans smoked leaves for respiratory ailments and asthma; flowers once widely used in cough medicines
Nettle (see Stinging nettle)		
Noni	<i>Morinda citrifolia</i>	Used in treatment of diabetes, high blood pressure, kidney disorders, and other ailments
Oats	<i>Avena sativa</i>	Extract from green oat seeds said to enhance both physical and sexual health
Olive	<i>Olea europaea</i>	Leaf extract contains oleuropein (calcium elenolate), which is a wide-spectrum bactericide and a virucide; it evidently enhances the production of phagocytes, thereby strengthening the immune system
Onion	<i>Allium</i> spp.	Cheyenne Indians applied bulbs in poultice to boils; juice and olive oil used to cure earaches; can lower blood pressure and help dissolve blood clots; the active principle, allicin, is also produced by garlic
<i>Ophiopogon japonicus</i> (see Lilyturf plant)		
Opium poppy	<i>Papaver somniferum</i>	Morphine and codeine obtained from latex of immature fruits
Oregon grape	<i>Berberis aquifolium</i>	Bark tea drunk by Native Americans to settle upset stomach; used in strong doses for treatment of venereal diseases
Pacific yew	<i>Taxus brevifolia</i>	Taxol, a promising anticancer agent, is extracted from bark
Panax ginseng	<i>Panax pseudoginseng</i> , <i>Panax ginseng</i>	Root extract strengthens respiratory immune system, resulting in reduction of respiratory infections; strong antioxidant
Pansy (wild)	<i>Viola</i> spp.	Plants ground up and applied to skin sores or inflammations
Papaya	<i>Carica papaya</i>	Exudate of scarified unripe fruit is source of <i>papain</i> (a protein that is used to digest ruptured back discs and to facilitate digestion of food, as a meat tenderizer, for termite control, and for reduction of cloudiness in beer); <i>papain</i> , which is also believed to have antibiotic properties, may be used with <i>bromelain</i> from pineapples and trypsin to facilitate breakdown of cardiovascular plaque
Parsley	<i>Petroselinum crispum</i>	Richer in vitamin C than citrus fruits; inhibits proliferation of tumor cells; suppresses halitosis; general organ tonic
Pau d'arco	<i>Tabebuia heptaphylla</i>	General immune system booster
Peanut	<i>Arachis hypogoea</i>	Reservatrol extracted from peanut and mulberry plants said to be effective in inhibiting several types of cancers
Pennyroyal	<i>Mentha pulegium</i>	Native Americans used leaf tea in small amounts for relief of headaches and flatulence and to repel chiggers (Caution: Pennyroyal is toxic in larger amounts)
Peppermint	<i>Mentha piperita</i>	Peppermint oil is used to alleviate symptoms of respiratory infections and inflammation
Perilla	<i>Perilla frutescens</i>	Seeds are the source of perilla oil, which is exceptionally rich in omega-3 fatty acids essential to cardiac health
Persimmon	<i>Diospyros virginiana</i>	Liquid from boiled fruit used as an astringent; fruits with high beta-carotene content; leaves have high vitamin C content
Peruvian balsam	<i>Myroxylon balsamum</i>	Resin obtained from scorched or incised tree trunks is used as an antiseptic on burns, wounds, and hemorrhoids
Peyote	<i>Lophophora williamsii</i>	Alcoholic extract of plant used as an antibiotic
Pine	<i>Pinus</i> spp.	Pycnogenols extracted from bark have powerful antioxidant properties

Table A3.4

Plants, Algae, Fungi, and Bacteria Associated with Medicinal Uses

Organism	Scientific Name	Uses
Pineapple	<i>Ananas comosus</i>	Bromelain extracted from pineapple decreases clumping of blood platelets and fibrin, thereby improving circulation; bromelain also accelerates healing and can relieve pain, all without the side effects of aspirin, which is widely used for the same purposes; repeatedly chewing or holding fresh pineapple in the mouth may cure mouth ulcers
Pinkroot	<i>Spigelia marilandica</i>	Powdered root very effective in expulsion of roundworms from intestinal tract
Pipssisewa	<i>Chimaphila umbellata</i>	Native Americans steeped plant in water and used liquid to draw out blisters
Pitcher plant	<i>Sarracenia purpurea</i>	Native Americans used root widely as smallpox cure (records indicate it was effective)
Plantain	<i>Plantago ovata</i> and other <i>Plantago</i> spp.	(Not related to banana-like plantains.) Seed husks (known as psyllium) absorb water and are widely used in bulking laxatives; said to lower LDL cholesterol levels
Pleurisy root	<i>Asclepias tuberosa</i>	Liquid from roots boiled in water used in treatment of respiratory problems
Polypore fungus	<i>Grifola umbellata</i>	All parts enhance kidney and bladder function; also believed to have anticancer immune system–boosting properties
Prickly ash	<i>Zanthoxylum americanum</i>	Bark and berries widely used by Native Americans for toothache (pieces inserted in cavities); liquid infusion drunk for venereal diseases
Psoralea	<i>Psoralea corylifolia</i>	Flavonoids used in Chinese medicine to facilitate relief of urinary tract problems
Pumpkin	<i>Cucurbita pepo</i>	Seed oil used to promote prostate health
Puncture vine	<i>Tribulus terrestris</i>	Plant extracts believed to elevate testosterone levels and promote muscle gain in men and to elevate estrogen levels in women
Purple coneflower	<i>Echinacea purpurea</i>	Plant extracts used to boost the immune system
Pygeum	<i>Pygeum africanum</i>	Bark extracts used to promote shrinkage of benign swelling of the prostate gland in men; there is evidence that a combination of pygeum and stinging nettle (<i>Urtica dioica</i>) can significantly reduce urgency for night urination
Quassia	<i>Picraea excelsa</i> , <i>Quassia amara</i>	Wood extracts used as pinworm remedy and as insecticides
Rauwolfia ¹	<i>Rauwolfia serpentina</i>	Reserpine obtained from roots; drug used in treatment of mental illness and in counteracting effects of LSD
<i>Rauwolfia</i> ¹ <i>yunnanensis</i> (see Yunnan rauwolfia)		
Red-rooted sage	<i>Salvia miltiorhiza</i>	Plant extracts elevate blood oxygen content and are used to enhance blood circulation, particularly in the lungs; inhibits blood platelet clumping
Red yeast	<i>Monascus purpureus</i>	This yeast is cultured on rice; the combination improves circulation and balances cholesterol levels
Rehmannia	<i>Rehmannia glutinosa</i>	Experiments with animals indicates efficacy in strengthening kidney function and in lowering blood pressure
Rice (brown)	<i>Oryza sativa</i>	Inositol hexaphosphate (IP6), a B vitamin that is produced by rice, has been shown to control growth of cancer cells
Rye	<i>Secale cereale</i>	An Australian patented ryegrass extract known as Oralmat is proving to be effective in treating asthma, allergies, and other disorders, without the side effects of steroids
Saffron (meadow)	<i>Colchicum autumnale</i>	Drug colchicine from corms used in past for treatment of gout and back disc problems, but now mostly used experimentally to induce doubling of chromosome numbers in plants
St. John's wort	<i>Hypericum perforatum</i>	Extracts used in the treatment of depression; boosts serotonin production in the brain; the serotonin suppresses cravings for carbohydrates and tends to promote normal sleep patterns (Note: St. John's wort can interfere with the normal metabolic activities of some prescription medications, and its use should be supervised by informed personnel)
<i>Salvia miltiorhiza</i> (see Red-rooted sage)		
Sarsaparilla	<i>Aralia nudicaulis</i>	Cough medicines made from roots
Sassafras	<i>Sassafras albidum</i>	Tea of root bark used to induce sweating; used externally as a liniment

¹Frequently misspelled *Rauwolfia*.

Table A3.4

Plants, Algae, Fungi, and Bacteria Associated with Medicinal Uses

Organism	Scientific Name	Uses
Saw palmetto	<i>Serenoa repens</i>	Berry extracts clinically demonstrated to aid in shrinkage of benign swelling of prostate gland, increase urine flow, and normalize frequency of urination in men
<i>Schisandra chinensis</i> (see Magnolia vine)		
<i>Scutellaria baicalensis</i> (see Asian skullcap)		
Self-heal	<i>Prunella vulgaris</i>	Native Americans applied plants in poultices to boils; plant glucosides said to tone blood vessels
Seneca snakeroot	<i>Polygala senega</i>	Liquid from bark boiled in water applied to snakebites; taken internally as an abortifacient; used in a cough remedy
Senna	<i>Cassia senna</i> and other spp.	Leaf extract used as a laxative or purgative
Siberian ginseng	<i>Eleutherococcus senticosus</i>	Liquid extract of rhizome and roots used as an immune system and stamina booster; in some individuals, it appears to counteract chronic fatigue syndrome
Sicklepod	<i>Cassia obtusifolia</i>	Plant extracts said to lower both blood pressure and LDL cholesterol levels
Skeleton weed	<i>Lygodesmia juncea</i>	Widely used by Native American women to increase milk flow
Skullcap	<i>Scutellaria laterifolia</i>	Dried plant used as an anticonvulsive in treatment of epilepsy and as a sedative (see also Asian skullcap)
Slippery elm	<i>Ulmus fulva</i>	Dried inner bark, which contains an aspirin-like substance, used to soothe inflamed membranes
Southern tsangshu	<i>Atractylodes lancea</i> , <i>Atractylodes macrocephala</i>	Plant extracts used as a diuretic; also used to balance blood sugar levels and promote spleen health
Soy	<i>Glycine max</i>	Isoflavones from plants (especially fruits) have medicinal value; ipriflavone appears to inhibit development of osteoporosis and increase bone density; genistein apparently diminishes production of cellular stress protein and inhibits the growth of human prostate cancer cells; reduces symptoms of menopause
Spicebush	<i>Lindera benzoin</i>	Berries, buds, and bark brewed for tea used to reduce fevers
Spruce	<i>Picea</i> spp.	Cree Indians ate small, immature female cones for treatment of sore throat; spruce leaf oil and spruce shoots used in Europe to alleviate cold, bronchitis, and fever symptoms
Squills	<i>Urginea maritima</i>	Bulbs of red variety are source of a heart stimulant; bulbs of white variety are widely used as a rodent killer
Stevia	<i>Stevia rebaudiana</i>	Stevia extracts are 30–100 times sweeter than sugar; used as a sweetener by diabetics and others needing to reduce their sugar intake
Stinging nettle	<i>Urtica dioica</i>	Used in treatment of allergic disorders and inflammatory conditions of the lungs; the roots are rich in vitamin C, which apparently inhibits breakdown of testosterone, consequently increasing testosterone levels in the body (see also Pygeum)
Stoneseed	<i>Lithospermum ruderale</i>	Shoshoni women reported to have drunk cold-water infusion of roots daily for 6 months to ensure permanent sterility (experiments with mice suggest substance to the reports)
Strophanthus	<i>Strophanthus</i> spp.	Seeds are major source of cortisone and also source of a heart stimulant
Strychnine plant	<i>Strychnos nox-vomica</i>	Strychnine extracted from seeds widely used as an insect and animal poison and as the principal ingredient in blowgun darts used by South American aborigines; minute amounts stimulate the central nervous system and relieve paralysis
Sumac	<i>Rhus</i> spp. (especially <i>R. glabra</i>)	Native Americans applied leaf decoction as a remedy for frostbite; fruits and liquid made from leaves applied to poison ivy rash and gonorrhea sores; root chewed for treatment of mouth ulcers
Sweet flag	<i>Acorus calamus</i>	Boiled root applied to burns; root chewed for relief of colds and toothache
Sweet gum	<i>Liquidambar styraciflua</i>	Bud balsam used to treat chigger bites; balsam also used in insect fumigating powders
Sword fern	<i>Polystichum munitum</i>	Boiled rhizome used by Native Americans to treat dandruff; sporangia and spores applied to burns
Tamarind	<i>Tamarindus indica</i>	Fruit pulp used as laxative
Tinospora	<i>Tinospora cordifolia</i>	Reported to boost the immune system
Tomato	<i>Solanum esculentum</i>	Rich source of lycopene, which is involved with health of the prostate gland and eyes

Table A3.4

Plants, Algae, Fungi, and Bacteria Associated with Medicinal Uses

Organism	Scientific Name	Uses
Tree peony	<i>Paeonia suffruticosa</i>	Bark extract said to reduce production of blood platelets
<i>Trichosanthes kirilowii</i> (see Kirilow's cucumber)		
Turmeric	<i>Curcuma longa</i>	Rhizome extracts appear to lower LDL cholesterol levels, prevent blood clots, suppress cancer proliferation, and reduce joint pain
Uncaria	<i>Uncaria rhynchophylla</i>	Glucoside extracts used in China to lower blood pressure
Uzara	<i>Xysmalobium undulatum</i>	Root extracts used to control diarrhea (Caution: Uzara glycosides may react with other glycosides; drug should be taken only at recommended doses and not with other medications)
Valerian	<i>Valeriana septentrionalis</i>	Pulverized plant applied to wounds; extracts taken internally have sedative effect and are used to treat insomnia
Velvet bean	<i>Mucuna</i> spp.	Seeds contain L-dopa used in treatment of Parkinson's disease
Virginia snakeroot	<i>Aristolochia serpentaria</i>	Native Americans used tea of plant for reducing high fevers
Wahoo	<i>Euonymus atropurpurea</i>	Bark steeped in water; liquid has digitalis-like effect on heart
Walnut (English)	<i>Juglans regia</i>	Extracts have been demonstrated to kill or inhibit a wide range of pathogenic microorganisms and to reduce LDL cholesterol levels
Watercress	<i>Rorippa nasturtium-aquaticum</i>	Some evidence that daily consumption retards development of lung cancer in smokers
Water plantain	<i>Alisma plantago-aquatica</i>	Rhizome extracts have diuretic properties; believed to improve bladder and kidney function
Western wallflower	<i>Erysimum capitatum</i>	Zuni Indians ground plant with water and applied it to skin to prevent sunburn
White mulberry	<i>Morus alba</i>	Fruit believed to improve kidney and liver function; also alleviates respiratory problems including asthma and mucous production
Willow	<i>Salix</i> spp.	Chickasaw Indians snuffed infusion of roots as a remedy for nosebleed; Pomo Indians boiled bark in water and applied liquid for relief of skin itches; fresh inner bark contains salicin, an aspirin-like compound used to reduce fevers
Wintergreen	<i>Gaultheria procumbens</i>	Oil from leaves used as a folk remedy for body aches and pains
Witch hazel	<i>Hamamelis virginiana</i>	Oil distilled from twigs and leaves used primarily as an external astringent that staunches bleeding
Wormseed	<i>Chenopodium ambrosioides</i>	Oil from seeds used to expel intestinal worms
Wormwood	<i>Artemisia</i> spp.	Yokia Indians made tea from leaves to treat bronchitis; other Native Americans used tea as a cold remedy
Yarrow	<i>Achillea millefolium</i>	Native Americans used plant infusion for treating wounds, earaches, and burns; infusion drunk to relieve upper respiratory tightness; fresh leaf inserted in nostril to staunch nosebleed
Yellow lady's slipper	<i>Cypripedium calceolus</i>	Dried root used for relief of insomnia and as sedative
Yellow nut grass	<i>Cyperus esculentus</i>	Paiute Indians pounded tubers with tobacco leaves and applied mass in wet dressing for treatment of athlete's foot
Yerba santa	<i>Eriodictyon californicum</i>	Native Americans smoked leaves or drank leaf tea for treatment of colds or asthma
Yucca	<i>Yucca</i> spp.	Plants produce saponins used in birth control preparations and to treat inflammation and other conditions that might otherwise be treated with steroids such as cortisone
Yunnan rauwolfia	<i>Rauwolfia yunnanensis</i>	Plant extracts said to lower blood pressure
Zhi-mu (see Chinese lily)		

Memory Problems or Enhancement

Memory is associated with an adequate supply of oxygen to the brain and the proper functioning of chemicals involved in messages transmitted via nerves. The following plants or plant substances may improve blood flow to the brain (thereby increasing the oxygen supply) and either protect or augment *acetylcholine*, which is the chemical involved in transmissions between nerve cells.

1. *Ginkgo biloba* (Maidenhair Tree)

The leaves of this tree contain chemicals (e.g., specific terpenes, lactones, flavonoids) unknown in other plants. Numerous studies, particularly in Europe, indicate that *Ginkgo* extracts relax brain capillaries and thus improve blood flow. Clinical trials have shed light on the ability of *Ginkgo biloba* to enhance memory in healthy adults. The effects on memory enhancements, though, have not been conclusively demonstrated. *Ginkgo* extracts normally should not be taken concurrently with blood thinners such as coumadin.

2. *Huperzia serrata* (= *Lycopodium serratum*)

This Chinese club moss produces an alkaloid known as huperzine A. Huperzine A inhibits an enzyme that destroys acetylcholine, which is essential to nerve impulse transmission.

3. Lecithin

This well-known food product, which is derived commercially mostly from soybeans, is broken down and converted to acetylcholine in the brain. It is most effective in granular form.

4. *Centella asiatica* (Gotu kola)

Gotu kola is said to improve brain function, partly as a result of strengthening veins.

5. Phosphatidylserine

This fatty acid, whose absorption by the brain requires vitamin B₁₂ and bioflavonoids, tends to block stress hormones that impair memory. It is believed to have potential to reverse cognitive impairment in the elderly.

6. Dimethylaminoethanol (DMAE)

DMAE plays a role in the production of acetylcholine and helps the brain function more efficiently.

7. Vinpocetine

Vinpocetine is derived from an extract of periwinkle plants native to Madagascar. Experimental studies have shown vinpocetine significantly improves short-term

memory, evidently by enhancing blood flow to areas of the brain needing it most, and by increasing the capacity of red blood cells to carry oxygen. *Caution:* Long-term studies are needed to determine if repeated use could have any negative side effects.

8. Other Factors or Nutrients Involved in Memory

Higher-than-normal amounts of cholesterol and triglycerides in the blood can interfere with an adequate supply of nutrients to the brain (See “Cholesterol-Lowering Plants or Plant Derivatives” in this chapter). Exposure to free radicals, low blood sugar, and poor diet and/or exercise can also contribute to memory problems. It is important to have an adequate intake of manganese (5 mg daily), zinc (50 mg daily), vitamins A, B, C, and E; other antioxidants such as COQ10, pycnogenol, SOD (superoxide dismutase), grape seed extract; and the amino acids L-glutamine, L-phenylalanine, and L-tyrosine. Other plants or plant derivatives believed to aid memory include blue cohosh, *Gynostemma*, anise, piracetam, and rosemary.

References

- Allain, H., et al. 1993. Effect of two doses of *Ginkgo biloba* extract on the dual-decoding test in elderly subjects. *Clinical Therapeutics* 15(3): 549–58.
- Joseph, J., et al. 1998. Long-term dietary strawberry, spinach or Vitamin E supplementation retards the onset of age-related neuronal signal transduction and cognitive behavioral defects. *Journal of Neuroscience* 18(19): 8047–55.
- Mrak, R., et al. 1997. Aging-associated changes in the human brain. *Journal of Neuropathology and Experimental Neurology* 56(12): 1269–75.
- Skolnick, A. 1997. Old Chinese herbal medicine used for fever yields possible new Alzheimer’s disease therapy. *Journal of the American Medical Association* 227(10): 776.
- Wang, Z., et al. 1994. A double-blind control study of huperzine A and piracetam in patients with age-associated memory impairment and Alzheimer’s disease. *Neuro-psychopharmacology* 10(35): 7635.

Cholesterol-Lowering Plants or Plant Derivatives

1. *Allium sativum* (Garlic)

Allicin, which is produced by garlic and onions, has been demonstrated to have several beneficial effects on human health, including the capacity to significantly

lower blood cholesterol levels. Deodorized garlic powder is available in capsule form.

2. ***Crataegus oxycantha* (Hawthorn)**

Hawthorn plant extracts have been shown to regulate blood levels of cholesterol and reduce blood pressure.

3. ***Docosahexaenoic Acid* (DHA)**

There is evidence that DHA can play a role in balancing cholesterol and triglyceride levels in the blood.

4. ***Commiphora mukul* (Mukul myrrh)**

This small tree, native to Arabia and India, produces a resin known as *guggul* that lowers LDL cholesterol and other fat levels in the blood by stimulating the thyroid gland while at the same time raising HDL levels.

5. ***Cassia obtusifolia* (Sicklepod)**

Extracts of this plant have been shown to lower cholesterol levels.

6. ***Linum* spp. (Flax)**

Including flaxseed in one's daily diet has been shown to balance triglyceride and cholesterol levels in the blood.

7. ***Monascus purpureus* (Red yeast rice)**

Clinical trials involving the consumption of red yeast rice have demonstrated the rice's ability to significantly lower total serum cholesterol levels in humans.

References

- Addler, A. J., et al. 1997. Effect of garlic and fish oil supplementation on serum lipid and lipoprotein concentrations in hypercholesterolemic men. *Nutrition Research* 65(2): 445–50.
- Heber, D., et al. 1999. Cholesterol-lowering effects of proprietary Chinese red yeast rice supplement. *American Journal of Clinical Nutrition* 69(2): 231–36.
- Pearson, T., et al. 2000. The lipid treatment assessment project (L-TAP): A multicenter survey to evaluate the percentages of dislipodemic patients receiving lipid-lowering therapy and achieving low-density lipoprotein cholesterol goals. *Archives of Internal Medicine* 160(4): 459–67.

Wang, J., et al. 1997. Multicenter clinical trial of serum lipid-lowering effects of *Monascus purpureus* rice preparation from traditional Chinese medicine. *Current Therapeutic Research* 58(12): 964–66.

Hallucinogenic Plants

Although a few hallucinogenic substances produced by animals have been isolated and some have been synthesized, the majority of known hallucinogens are produced by plants. Table A3.5 is not a complete list, but it includes the better-known sources. The reader is referred to the “Additional Reading” section for further information.

Spice Plants

The word *spice* describes any aromatic plant or part of a plant used to flavor or season food; spices are also used to add scent or flavor to manufactured products (Table A3.6). Although spices have no nutritional value, they add a pleasurable zest to meals, and before food preservation was possible, they helped make palatable food that was still edible but unappealing.

The value placed on spice plants was responsible for changing the course of Western civilization as a principal motive behind the voyages of discovery.

Dye Plants

In the recent and the ancient past, dyes from many different plants were used to color cotton, linen, and other fabrics. Since the middle of the 19th century, however, natural dyes have been almost completely replaced in industry by synthetic dyes, and today, the use of natural dyes is largely confined to individual hobbyists.

Any reader interested in experimenting with natural dyes is encouraged not only to choose those plant materials included in Table A3.7, but to try any local plants available. The experimenter will soon find that quite unexpected colors may be derived from plants, as the colors of fresh flowers, bark, or leaves often bear little relationship to the colors of the dyes. For methods of dyeing, see references in the section on “Additional Reading” section at the end of this Appendix 3.

Table A3.5

Hallucinogenic Substances Produced by Plants and Fungi

Organism	Scientific Name	Part Used	Principal Active Substance
Ajuca	<i>Mimosa hostilis</i>	Roots	Nigerine
Belladonna	<i>Atropa belladonna</i>	Leaves	Hyoscyamine, scopolamine
Caapi	<i>Banisteriopsis caapi</i>	Wood	Harmine
Canary broom (<i>Genista</i> of florists, but true <i>Genista</i> is a broom genus that differs from <i>Cytisus</i> in that <i>Cytisus</i> spp. have a seed appendage whereas those of <i>Genista</i> do not)	<i>Cytisus canariensis</i>	Seeds	Cytisine
Catnip	<i>Nepeta cataria</i>	Leaves	Unknown
Cohoba	<i>Piptadenia peregrina</i> , <i>P. macrocarpa</i>	Seeds, pods (snuff)	Tryptamines
Coral bean	<i>Erythrina</i> spp.	Seeds	Unknown
Cubbra borrachera	<i>Brugmansia</i> spp.	Leaves	Scopolamine
Ergot fungus	<i>Claviceps purpurea</i>	Rhizomorph	Ergine (LSD)
Fly agaric	<i>Amanita muscaria</i>	Mushroom cap	Ibotenic acid, muscimol
Henbane	<i>Hyoscyamus</i> spp.	Leaves	Hyoscyamine, scopolamine
Iboga	<i>Tabernanthe iboga</i>	Root bark	Ibogaine
Jimson weed	<i>Datura</i> spp.	All parts	Scopolamine
Kava kava	<i>Piper methysticum</i>	Root (large amounts of beverage produce hallucinations)	Myristicin-like compound
Mace	<i>Myristica fragrans</i>	Aril of seed	Myristicin
Mescal bean	<i>Sophora secundiflora</i>	Seeds	Cytisine
Morning glory	<i>Ipomoea violacea</i>	Seeds	Ergine
Nutmeg	<i>Myristica fragrans</i>	Seeds	Myristicin
Ololiuqui	<i>Rivea corymbosa</i>	Seeds	Turbicoryn
Peyote	<i>Lophophora williamsii</i>	Stems	Mescaline
Psilocybe and related mushrooms	<i>Psilocybe</i> spp., <i>Conocybe</i> spp., <i>Panaeolus</i> spp., and others	All parts	Psilocybin, psilocin
Rape dos Indios	<i>Maquira sclerophylla</i>	Dried plant (snuff)	Unknown
San Pedro	<i>Trichocereus pachanoi</i>	Stems	Mescaline
Sassafras	<i>Sassafras albidum</i>	Root bark (large amounts of tea)	Safrole
Sweet flag	<i>Acorus calamus</i>	Dried root	Asarone, β -asarone
Syrian rue	<i>Peganum harmala</i>	Seeds	Harmine
Vygie	<i>Mesembryanthemum expansum</i>	All parts	Mesebrine
Wood rose	<i>Argyrea nervosa</i>	Seeds	Ergoline alkaloids
Yakee (Parica)	<i>Viola</i> spp.	Resin from inner surface of freshly removed bark (snuff)	Tryptamine
Yohimbe	<i>Corynanthe</i> spp., <i>Pausinystalia johimbe</i>	Bark	Yohimbine

Table A3.6

Plants Used to Season or Flavor

Spice	Scientific Name of Plants	Part Used; Remarks	Principal Source
Allspice	<i>Pimento officinalis</i>	Powdered dried fruit	Jamaica
Almond	<i>Prunus amygdalus</i>	Oil from seed used for flavoring baked goods	Mediterranean; U.S.
Angelica	<i>Angelica archangelica</i>	Stems candied; oil from seeds and roots used in liqueurs	Europe; Asia
Anise	<i>Pimpinella anisum</i>	Oil distilled from fruits used for flavoring	Widely cultivated
Arrowroot	<i>Maranta arundinacea</i>	Powdered root used in milk puddings, baked goods	South America
Asafoetida	<i>Ferula asafoetida</i>	Powdered gum from stems and roots used in minute quantities with fish	Middle East
Balm (Melissa)	<i>Melissa officinalis</i>	Oil from leaves used in beverages; leaves used as food flavoring	U.S.; Mediterranean
Basil	<i>Ocimum basilicum</i>	Leaves used in meat dishes, soups, sauces	Mediterranean
Bay	<i>Laurus nobilis</i>	Leaves used in soups, sauces	Europe
Bell pepper	<i>Capsicum frutescens</i>	Dried, diced fruit used in chip dips, salad dressings	Widely cultivated
Bergamot	<i>Monarda didyma</i>	Leaves used with pork (<i>Note:</i> A perfume oil obtained from a variety of orange— <i>Citrus aurantium</i> var. <i>bergamia</i> —is also called bergamot)	North America (<i>Monarda</i>); Italy (<i>Citrus</i>)
Black pepper	<i>Piper nigrum</i>	Dried fruits used as a condiment	India; Indonesia
Borage	<i>Borago officinalis</i>	Leaves used as a beverage flavoring	England
Burnet	<i>Sanguisorba minor</i>	Used in soups and casseroles	Eurasia
Calamus	<i>Acorus calamus</i>	Powdered rhizome used for flavoring	Europe; Asia; North America
Capers	<i>Capparis spinosa</i>	Flower buds used for flavoring relishes, pickles, sauces	Mediterranean
Caraway	<i>Carum carvi</i>	Seeds used in breads, cheeses; seed oil used in the liqueur kummel	North America; Europe
Cardamon	<i>Elletaria cardamomum</i>	Dried fruit and seeds used for flavoring baked goods (<i>Note:</i> Several false cardamoms— <i>Amomum</i> spp.—are sold commercially)	India; Sri Lanka; Central America
Cassia	<i>Cinnamomum cassia</i>	Powdered bark used as cinnamon substitute	Southeast Asia
Cayenne pepper	<i>Capsicum</i> spp.	Powdered dried fruits used in chili powder, Tabasco sauce	American tropics
Celery	<i>Apium graveolens</i>	Seeds used in celery salt, soups	Europe; U.S.
Chervil	<i>Anthriscus cerefolium</i>	Used as a parsley substitute	Europe; Near East
Chicory	<i>Cichorium intybus</i>	Ground, dried root added to coffee	Mediterranean
Chives	<i>Allium schoenoprasum</i>	Leaves, bulbs used with sour cream, butter	Widely cultivated
Chocolate	<i>Theobroma cacao</i>	Ground seeds used for flavoring	Africa; South America
Cilantro	<i>Coriandrum sativum</i>	Leaves used in avocado dip and with poultry	Europe
Cinnamon	<i>Cinnamomum zeylanicum</i>	Ground bark used for flavoring baked goods; oil from leaves used as flavoring, clearing agent	Seychelles; Sri Lanka
Citrus	<i>Citrus</i> spp.	Fruits, especially rinds, source of flavoring oil	Mediterranean; South Africa; U.S.
Cloves	<i>Syzygium aromaticum</i>	Dried flower buds used to flavor cooked fruits, toothpaste, candy	Moluccas (Spice Islands)
Coffee	<i>Coffea arabica</i>	Roasted seeds source of mocha-coffee flavoring	Tropics
Coriander	<i>Coriandrum sativum</i>	Ground seed used in German frankfurters, curry powders	Mediterranean
Costmary	<i>Chrysanthemum balsamita</i>	The leaves used sparingly in salads add a mint flavor	Europe, Asia
Cubebs	<i>Piper cubeba</i>	Dried fruits used as seasoning	East Indies
Cumin	<i>Cuminum cyminum</i>	Ground seed used with meats, pickles, cheeses, curry	Mediterranean
Curry	A blend of parts of plants of several different spp.	A spicy condiment containing several ingredients, such as turmeric, cumin, fenugreek, and zedoary	India
Dill	<i>Anethum graveolens</i>	Seeds used in pickling brines; leaves used for seasoning meat loaves, sauces	Europe; Asia
Dittany	<i>Origanum dictamnus</i>	Leaves used as seasoning for poultry, meats	Crete
Eucalyptus	<i>Eucalyptus</i> spp.	Oil from leaves used in toothpastes, flavoring agents	Australia
Fennel	<i>Foeniculum vulgare</i>	Seeds used in baked goods	Europe
Fenugreek	<i>Trigonella foenum-graecum</i>	Oil distilled from seeds used in pickle, chutney, curry powders, imitation maple flavoring	Widely cultivated
Filé (see Sassafras)			

Table A3.6

Plants Used to Season or Flavor

Spice	Scientific Name of Plants	Part Used; Remarks	Principal Source
Fruit-scented sage	<i>Salvia dorisiana</i>	Plant used with beef and fish; it adds a grapefruit-pineapple flavor to the meat	Honduras
Garlic	<i>Allium sativum</i>	Fresh or dry bulbs used for meat seasonings	Widely cultivated
Ginger	<i>Zingiber officinale</i> and others	Dried rhizomes used for flavoring many foods and drinks	India; Taiwan
Grains of paradise	<i>Aframomum melegueta</i>	Seeds used to flavor beverages and medicines	West Africa
Hops	<i>Humulus lupulus</i>	Dried inflorescences of female plants used in brewing beer	Europe; North America
Horseradish	<i>Rorippa armoracia</i>	Grated fresh root used as a condiment	Europe; North America
Juniper	<i>Juniperus</i> spp.	“Berries” used to season beef roasts, poultry, sauces	North America
Lemon balm	<i>Melissa officinalis</i>	Leaves give a lemon-mint flavor to stews and desserts	Southern Europe
Licorice	<i>Glycyrrhiza glabra</i>	Dried rhizome and root used to flavor pontefract cakes, candies	Middle East
Lovage	<i>Ligusticum scoticum</i>	Stems candied; seeds used in pickling sauces; celery substitute	Europe
Mace	<i>Myristica fragrans</i>	Aril of seed used for flavoring beverages, foods	Grenada; Indonesia; Sri Lanka
Marigold	<i>Tagetes</i> spp.	Petals substituted for saffron in rice dishes, stews	Widely cultivated
Marjoram	<i>Origanum hortensis</i>	Leaves used in stews, dressings, sauces	Mediterranean
Mugwort	<i>Artemisia douglasiana</i>	Fatty meat flavored with leaves	West Coast of North America
Mustard	<i>Brassica</i> spp.	Ground seeds used in meat condiment	Europe; China
Nasturtium	<i>Tropaeolum majus</i>	Flowers, seeds, leaves used in salads	Widely cultivated
Nutmeg	<i>Myristica fragrans</i>	Seeds used for flavoring foods, beverages	Grenada; Indonesia; Sri Lanka
Oregano	<i>Origanum vulgare</i> and others	Leaves used as seasoning with poultry, meats	Europe
Paprika (see <i>Cayenne pepper</i>)			
Parsley	<i>Petroselinum crispum</i>	Leaves used as meat garnish and flavoring in sauces	Widely cultivated
Peppermint	<i>Mentha piperita</i>	Oil from leaves used for food, drink, toothpaste flavoring (much commercial menthol is derived from <i>Mentha arvensis</i> grown in Japan)	U.S.; Russia
Pimiento	<i>Capsicum</i> spp.	Bright red fruits of a cultivated variety of pepper used in stuffing olives and in cold meats, cheeses	Central and South America
Poppy	<i>Papaver somniferum</i>	Seeds used in baking	Widely cultivated
Rosemary	<i>Rosmarinus officinalis</i>	Oil from leaves used in perfumes, soaps	Mediterranean
Rue	<i>Ruta graveolens</i>	Flavoring for fruit cups, salads	Europe
Saffron	<i>Crocus sativus</i>	Dried stigmas used to flavor oriental-style dishes	Spain; India
Sage	<i>Salvia officinalis</i>	Leaves used in poultry and meat dressings	Yugoslavia
Salad burnet	<i>Poterium sanguisorba</i>	Leaves impart a cucumber-like flavor to salads	Europe; W. Asia
Sarsaparilla	<i>Smilax</i> spp.	Roots are source of flavoring for beverages, medicines	American tropics
Sassafras	<i>Sassafras albidum</i>	Bark and wood yield flavoring for beverages, toothpaste, gumbo	U.S.
Savory (summer)	<i>Satureia hortensis</i>	Leaves used in green bean and bean salads, lentil soup, with fish	Mediterranean
Savory (winter)	<i>Satureia montana</i>	Leaves used as seasoning in stuffings, meat loaf, stews	Europe
Scallion	<i>Allium fistulosum</i>	Leaves used in wine cookery, soups	Widely cultivated
Sesame	<i>Sesamum indicum</i>	Seeds used in baking	Asia
Shallot	<i>Allium ascalonicum</i>	Bulbs, leaves used in Colbert butter, wine cookery	Widely cultivated
Southernwood	<i>Artemisia abrotanum</i>	Leaves used to flavor cakes	Europe
Star anise	<i>Illicium verum</i>	Fruits used in candy and cough drops	China
Stonecrop	<i>Sedum acre</i>	Dried leaves (ground) used as pepper substitute	Europe
Sweet cicely	<i>Osmorhiza</i> spp.	Leaves have sweet, slight anise flavor; used to flavor dishes and baked goods that incorporate cooked fruits	North America; E. Asia
Sweet woodruff	<i>Galium odoratum</i>	Plants used to flavor fruit punches and strawberries	Europe; N. Africa; Asia

Table A3.6

Plants Used to Season or Flavor

Spi	Scientific Name of Plants	Part Used; Remarks	Principal Source
Tansy	<i>Tanacetum vulgare</i>	Leaves used in small amounts to flavor baked goods, pancakes, and puddings	Europe; Asia
Tarragon	<i>Artemisia dracunculus</i>	Leaves and flowering tops used in pickling sauces	Europe
Thyme	<i>Thymus vulgaris</i>	Leaves used in meat and poultry dishes, soups, sauces	Widely cultivated
Tonka bean	<i>Dipteryx</i> spp.	Seeds source of flavoring for tobacco; vanilla substitute (now largely synthesized)	American tropics
Turmeric	<i>Curcuma longa</i>	Rhizomes powdered and used in curry powders, meat flavoring	India; China
Vanilla	<i>Vanilla planifolia</i>	Flavoring extracted from fruits; used in foods, drinks	Malagasay Republic
Wintergreen	<i>Gaultheria procumbens</i>	Oil from leaves, bark used as flavoring for confections, toothpaste	U.S.
Zedoary	<i>Curcuma zedoaria</i>	Dried rhizome used in liqueurs, curry powders	India

Table A3.7

Plant and Fungal Sources of Natural Dyes

Organism or Dye	Scientific Name of Source	Remarks
Acacia	<i>Acacia</i> spp.	Brown dyes from bark and fruits
Alder	<i>Alnus</i> spp.	Brownish dyes from bark
Alkanet	<i>Alkanna tinctoria</i>	Red dye from roots
Annatto	<i>Bixa orellana</i>	Yellow or red dye from pulp surrounding seeds
Bamboo	<i>Bambusa</i> spp.	Light green dye from leaves
Barberry	<i>Berberis vulgaris</i>	Grayish dye from leaves
Barwood	<i>Baphia nitida</i>	Purplish dyes from wood
Bearberry	<i>Arctostaphylos uva-ursi</i>	Yellowish dye from leaves
Bedstraw	<i>Galium</i> spp.	Light reddish brown dyes from roots
Birch	<i>Betula</i> spp.	Light brown to black dyes from bark
Black cherry	<i>Prunus serotina</i>	Red dye from bark; gray to green dyes from leaves
Black walnut	<i>Juglans nigra</i>	Rich brown dye from bark; brown dye from walnut hulls
Bloodroot	<i>Sanguinaria canadensis</i>	Red dye from rhizomes
Blueberry	<i>Vaccinium</i> spp.	Blue to gray dye from mature fruits (tends to fade)
Bougainvillea	<i>Bougainvillea</i> spp.	Light brownish dyes from floral bracts
Brazilwood	<i>Caesalpinia</i> spp.	Reddish dyes from wood
Buckthorn	<i>Rhamnus</i> spp.	Green dyes from fruits
Buckwheat	<i>Fagopyrum esculentum</i>	Blue dye from stems
Buckwheat (wild)	<i>Eriogonum</i> spp.	Dark gold, pale yellow, and beige dyes from stems and flowers
Buffaloberry	<i>Shepherdia argentea</i>	Red dye from fruit
Butternut	<i>Juglans cinerea</i>	Yellow to grayish brown dyes from fruit hulls
Cocklebur	<i>Xanthium strumarium</i>	Dark green dye from stems and leaves
Coffee	<i>Coffea arabica</i>	Light brown dye from ground, roasted seeds
Cudbear (Archil)	<i>Rocella</i> spp. (lichen)	Red dye obtained by fermentation of thallus
Cutch	<i>Acacia</i> spp.; <i>Uncaria gambir</i>	Brown to drab green dyes from stem gums
Dock	<i>Rumex</i> spp.	Light brown dyes from stems and leaves
Dogwood	<i>Cornus florida</i>	Red dye from bark; purplish dye from root
Doveweed	<i>Eremocarpus setigerus</i>	Light to olive green dye from entire plant
Dyer's rocket	<i>Reseda luteola</i>	Orangish dye from all parts
Elderberry	<i>Sambucus</i> spp.	Blackish dye from bark; purple, blue, or dark brown dyes from fruits

Table A3.7 Plant and Fungal Sources of Natural Dyes

Organism or Dye	Scientific Name of Source	Remarks
Eucalyptus	<i>Eucalyptus</i> spp.	Beige dyes from bark
Fennel	<i>Foeniculum vulgare</i>	Yellow dyes from shoots
Fig	<i>Ficus carica</i>	Green dyes from leaves and fruits
Fustic	<i>Chlorophora tinctoria</i>	Yellow, bright orange, and greenish dyes from heartwood
Gamboge	<i>Garcinia</i> spp.	Yellow dye from resins that ooze from cuts made on stems
Giant reed	<i>Arundo donax</i>	Pale yellow dye from leaves
Grape	<i>Vitis</i> spp.	Bright yellow to olive green dyes from leaves
Hawthorn	<i>Crataegus</i> spp.	Pink dye from ripe fruits
Hemlock	<i>Tsuga</i> spp.	Reddish brown dye from bark
Henna	<i>Lawsonia inermis</i>	Orange dye from shoots and leaves
Hickory	<i>Carya tomentosa</i>	Yellow dye from bark
Hollyhock	<i>Althaea rosea</i>	Purplish black dye from flower petals
Horsetail	<i>Equisetum</i> spp.	Tan dyes from all green parts
Indigo	<i>Indigofera tinctoria</i>	Bright blue dyes from leaves
Kendall green (see <i>Woadwaxen</i>)		
Larkspur	<i>Delphinium</i> spp.	Blue dyes from petals
Lichens	Many genera and species	Many lichens yield (with various mordants) brilliant shades of yellows, golds, and browns
Litmus	<i>Rocella tinctoria</i>	Widely used pink-to-blue pH indicator dye from thallus
Logwood	<i>Haematoxylon campechianum</i>	Dark blue-purple dye from heartwood (widely used for staining tissues in microscope slides)
Lokao	<i>Rhamnus</i> spp.	Green dye from wood
Lupine	<i>Lupinus</i> spp.	Greenish dyes from flowers
Madder	<i>Rubia tinctorium</i>	Bright red dye from roots
Madrone	<i>Arbutus menziesii</i>	Brown dye from bark
Manzanita	<i>Arctostaphylos</i> spp.	Beige to dull yellow dyes from dried fruits
Maple	<i>Acer</i> spp.	Pink dye from bark
Marsh marigold	<i>Althya palustris</i>	Yellow dye from petals
Milkweed	<i>Asclepias speciosa</i>	Pale yellow dyes from leaves
Morning glory	<i>Ipomoea violacea</i>	Gray-green dye from blue flowers
Mullein	<i>Verbascum thapsus</i>	Gold dyes from leaves
Oak	<i>Quercus</i> spp.	Yellow dye from bark
Onion	<i>Allium cepa</i>	Reddish brown dyes from dry outer bulb scales of red onions; yellow dyes from similar parts of yellow onions
Oregon grape	<i>Berberis aquifolium</i>	Yellow dyes from roots
Osage orange	<i>Maclura pomifera</i>	Yellow, gray, and green dyes from fruits; yellow-orange dye from wood
Peach	<i>Prunus persica</i>	Green dyes from leaves
Poke	<i>Phytolacca americana</i>	Red dyes from mature fruits
Pomegranate	<i>Punica granatum</i>	Dark gold dye from fruit rinds
Prickly lettuce	<i>Lactuca serriola</i>	Green dye from leaves
Privet	<i>Ligustrum vulgare</i>	Yellow-green dye from leaves; deep gray dye from berries
Quercitron	<i>Quercus velutina</i>	Bright yellow dye from bark
Rhododendron	<i>Rhododendron</i> spp.	Tan dyes from leaves
Safflower	<i>Carthamnus tinctorius</i>	Reddish dye from flower heads
Saffron	<i>Crocus sativus</i>	Powerful yellow dye from stigmas
Sage	<i>Salvia officinalis</i>	Yellow dye from shoots
St. John's wort	<i>Hypericum</i> spp.	Light brownish dyes from leaves
Sandalwood	<i>Pterocarpus santalinus</i>	Red dye from wood
Sappanwood	<i>Caesalpinia sappan</i>	Red dye from heartwood
Sassafras	<i>Sassafras albidum</i>	Orange brown dye from bark
Scotch broom	<i>Cytisus scoparius</i>	Yellow dye from all parts of plant
Smoke tree	<i>Cotinus coggyria</i>	Orange-yellow dye from wood (dye sometimes called "young fustic")
Smooth sumac	<i>Rhus glabra</i>	Grayish brown dye from bark
Tansy	<i>Tanacetum</i> spp.	Yellow and green dyes from leaves

Table A3.7

Plant and Fungal Sources of Natural Dyes

Organism or Dye	Scientific Name of Source	Remarks
Toyon	<i>Heteromeles arbutifolia</i>	Reddish brown dyes from leaves
Turmeric	<i>Curcuma longa</i>	Orangish dye from rhizome
Woad	<i>Isatis tinctoria</i>	Blue dye from leaves
Woadwaxen	<i>Genista tinctoria</i>	Yellow dye from all parts
Yerba santa	<i>Eriodictyon californicum</i>	Rich dark brown dyes from leaves

Additional Reading

- Berry, A. 1995. *Know your spices: An alphabetical guide to your spice rack*. Franklin, TN: Runaway Press.
- Bliss, A. 1994. *North American dye plants*, rev. ed. New York: Loveland, CO: Interweave Press.
- Buchanan, R. 1995. *A dyer's garden: From plant to pot. Growing dyes for natural fibers*. Loveland, CO: Interweave Press.
- Elias, J. 1999. *The A to Z guide to healing herbal remedies*. New York: Random House Value Publishing.
- Foster, S. and J.A. Duke. 2014. *Peterson Field Guide to Medicinal Plants and Herbs of Central North America*, 3d ed. Boston: Houghton Mifflin Harcourt.
- Graedon, J., and T. Graedon. 2001. *The people's pharmacy guide to home and herbal remedies*. New York: St. Martin's Press.
- Heatherly, A. N. 1998. *Healing plants: A medicinal guide to native North American plants and herbs*. New York: Lyons Press.
- Kallas, J. 2010. *Edible wild plants: Wild foods from dirt to plate*. Layton, UT: Smith, Gibbs.
- Null, G. 1998. *The complete encyclopedia of natural healing*. New York: Kensington.
- Sanecki, K. N. 1998. *Growing and using herbs*. New York: Sterling.
- Schneider, E. 1998. *Uncommon fruits and vegetables*. New York: William Morrow & Co, Inc.
- Schultes, R. E., and A. Hoffman. 1980. *The botany and chemistry of hallucinogens*, 2d ed. Springfield, IL: Charles C. Thomas.
- Vogel, V. J. 1990. *American Indian medicine*. Norman, OK: University of Oklahoma Press.

See also the Additional Reading entries in Chapter 24.

For a list of useful plants, edible tropical and uncommon fruits, along with pertinent comments about them, check the following website: <http://www.mhhe.com/stern14e>, by clicking on Student Edition, then "Useful Plants."