

# INDEX

- Abortifacient, abortifacients  
 aconite, 737  
 barbados nut, 829  
 blister beetles, 972  
 blue cohosh, 395  
 camphor, 407, 408  
 cantharides, 974  
 cantharidin, 974  
 colocynth, 443  
 common oleander, 847, 850  
 dogbane, 849–850  
 mistletoe, 794  
 nutmeg, 67  
 oduvan, 755  
 pennyroyal, 563–565  
 pine thistle, 515  
 rue, 579  
 slangkop, Burke's, red, Transvaal, 857  
 tansy, 614  
 turpentine, 667  
 yarrow, 624–625  
 yellow bird-of-paradise, 749  
 yellow oleander, 854  
 yew, 899
- Abrin, 729–731  
 camphor  
 cinnamomin, 409  
 ricin, 409, 723, 730
- Absorption, xvii  
 aloe vera, 380  
 amatoxin-containing mushrooms  
 amatoxin poisoning, 273–275, 279  
 aspartame, 24
- bees, wasps, and ants  
 epinephrine, 963  
 blister beetles  
 cantharidin, 974  
 buckeye  
 β-escin, 884  
 calamus  
 β-asarone, 405  
 camphor, 409–411  
 cascara, 416–417  
 catechols, 682  
 castor bean  
 ricin, 719, 721  
 colchicine, 694–896, 698  
*clostridium perfringens*, 115  
 comfrey and other pyrrolizidine-containing plants  
 pyrrolizidine alkaloids, 453  
 cyanogenic foods  
 amygdalin, 48  
 cyanogenic glycosides, 45  
 prunasin, 48  
 daffodils and other emetic bulbs  
 galanthamine, 704  
 dogbane family and cardenolides  
 common oleander, 849  
 yellow oleander, 855–856  
 domoic acid, 214  
 ephedra alkaloids, 547  
 erythrosine, 29  
 garlic  
 S-allyl cysteine, 473  
 gastrointestinal viruses  
 viral gastroenteritis, 205  
 ginger, 485
- ginkgo, 492  
 ginseng, 500  
 goldenseal  
 berberine, 506  
 hawthorn, 512  
 hypericum extract, 602–603  
 inky cap and coprine toxicity  
 coprine, 295  
 ethanol, 296  
 isoxazole-containing mushrooms  
 and pantherina syndrome, 298–302  
 jeququirity bean and abrin, 730–731  
 jellyfish, 1088  
 Jimsonweed and other belladonna alkaloids, 779, 781  
 jin bu huan and  
 tetrahydropalmatine, 519  
 kaffir lily  
 lycorine, 711  
 kava, 528  
 Laetile®, 763  
 lavender, 534  
 licorice  
 glycyrrhetic acid, 540  
 limonene, 639  
 ma huang  
 ephedra alkaloids, 548  
 ephedrine, 547, 549  
 mayapple  
 podophyllotoxin, 789  
 milk thistle  
 silibinin, 555  
 mistletoe, 793

## INDEX

- Absorption (*cont'd*)  
  muscarine-containing mushrooms  
    and muscarine toxicity, 306
- mycotoxins  
  aflatoxin, 329  
  ergot alkaloids, 336, 337  
  fumonisin, 342  
  ochratoxin, 345  
  trichothecene compounds, 353
- neem oil, 651
- nicotine, 811
- peppermint oil  
  menthol, 655
- protozoa and intestinal parasites  
  *Cryptosporidium parvum*, 194
- rhubarb  
  oxalate, 86
- salmonella, 143
- scombroid fish poisoning, 257
- scorpions, 916
- Shiga enterotoxins, 152
- snow drop  
  galantamine, 714
- solanine, 80
- Vibrio* species, 168
- sassafras  
  safrrole, 584
- saw palmetto  
  oral absorption, 588
- sea snakes, 1076
- senna  
  rhein anthrone, 593  
  sennosides, 592, 593
- skullcap, 597–598
- St. John's wort, 602
- terrestrial snakes, 1035
- tree tobacco and other piperidine-containing plants  
  anabasine, 812  
  nicotine, 811
- ultraviolet, 731, 823
- water hemlock and water dropwort, 823
- yarrow, 624
- yohimbe bark and yohimbine, 629
- Acceptable daily intake (ADI)  
  food additives and sensitivities, 23–25  
  limonene, 639
- Acetaldehyde,  
  coprine-containing mushrooms, 295  
  false morel, 287  
  food additives, 25  
  peppermint, 654  
  purple coneflower, 570
- Achelase I and II, caterpillar venom, 991
- Aconite, 736
- Acorus calamus*. *See* Calamus
- Acquired immunodeficiency syndrome (AIDS)  
  *Cryptosporidium parvum*, 194  
  *Cyclospora cayetanensis*, 195–196  
    cyclosporiasis, 195
- gastrointestinal viruses, 206
- human immunodeficiency virus (HIV), 78, 128, 144, 187, 191, 194–197, 206, 571, 602, 793, 910, 911, 981
- non-nucleoside reverse transcriptase inhibitors, 603
- protease inhibitors, 473, 603
- suppression, 603
- Salmonella*, 146
- scabies mite, 910
- Acromelalgia, 269  
  Paxillus syndrome, 313–315
- Acromelic acid A-E compounds, Paxillus syndrome, 313–315
- Actaea racemosa*. *See* Black cohosh
- Adult respiratory distress syndrome (ARDS)  
  ants, 961  
  bees, 961  
  colchicine-containing plants, 695–696, 699  
  hornets, 961  
  Hymenoptera order, 961  
  marine animals  
    palytoxin, 1098  
  mycotoxins, 356  
  peppermint oil, 655  
  pine oil, 669  
  toxic oil syndrome, 11  
  turpentine oil, 669  
  wasps, 961  
  rattlesnake envenomation, 1031, 1034
- Aflatoxins, 327–332  
  cancer, 187, 331  
  black pepper seed contaminant, 72  
  food contaminant, 5  
  microvesicular steatosis, 92
- African blue lily, chemical composition and toxicity, 743–744
- Airborne contact phytodermatitis, 685
- Akee fruit, 34–38
- Alfimeprase, copperhead snakes, 1042
- Alimentary toxic aleukia (ATA).  
  trichothecene mycotoxins, 354–355
- Alkaloids. *See also* specific alkaloids  
  aconitum, 737–739  
  black cohosh, 388–399  
  blue cohosh, 394–396
- Carolina jessamine, 841–842
- cat's claw, 422–424
- death camas, 707–709
- ergot and related compounds, 332–340
- kaffir lily, 710–711
- mescal beans, 733–734
- zephyr lily, 716–717
- Allergic phytodermatitis, 678–679
- Allergic reactions  
  ant envenomation, 956, 958–959, 964, 1024  
  bee envenomation, 959, 961–962, 964, 1024
- begonias, 748
- black locust  
  pollen, 881
- blister beetles  
  cantharidin, 974
- bugs  
  venom, 971
- burdock root, 401
- buttercup family, 691
- castor bean  
  dust, 722  
  pulp, 719–720  
  ricin  
    inhaled, 722
- cat's claw  
  allergic interstitial nephritis, 424
- centipede envenomation, 952
- chamomile tea, 427
- chaparral, 431–432
- chase tree, 436
- Clostridium botulinum*  
  horse-derived antitoxin, 109
- clove  
  leaf oil, 440
- cinnamon oil, 42
- daffodils, 704
- dust mites, 355
- echinacea, 571–572
- eugenol, 440
- feverfew, 467–468
- fly bites, 981
- fruit skin, 50
- garlic, 474
- ginkgo, 493–494
- grass pea, 64
- guar gum-containing products, 28
- hornet  
  vespid venom, 958
- horse chestnut  
  pollen, 884
- jequirity bean, 731
- jellyfish envenomation, 1089
- juniper, 523

- lavender, 534  
 limonene, 639  
*Listeria monocytogenes*  
 penicillin, 137  
 lupine  
 seeds, 786  
 milk thistle  
 extract, 556  
 mosquito bites, 981  
 mushrooms, 268  
 penicillin G, 279  
 mycotoxins  
 airborne molds, 318, 320, 323  
 antigen-specific IgA  
 concentrations, 358  
 fungi, 324  
 damp environments, 355–356  
 mold, 324, 326  
 nutmeg, 69  
 peppermint  
 oil, 655  
 philodendron, 771  
 plant dermatitis, 677–679, 682, 684–685, 687  
 rosemary, 576  
 rue  
 extract, 580  
 saw palmetto  
 extract, 589  
*Schefflera* species, 771  
 scombrid fish, 258  
 scorpion envenomation, 922  
 sea urchin  
 spines, 1108  
 senna, 594  
 snake envenomation, 1059  
 antivenom, 1034–1038  
 spider  
 antivenom, 930  
 bites, 941  
 sponges  
 Dogger Bank itch, 1103  
 spurge family, 756  
 dog's mercury  
 pollen, 757  
 St. John's wort  
 hypericum extract, 604  
 tansy, 615–616  
 tea tree  
 oil, 661  
 ticks, 912  
 turpentine  
 oil, 669  
 wandering Jew, 819  
 wasp envenomation, 958, 1024  
 yellow jackets, 955  
 yarrow, 624  
 yew, 901
- Allopathic medicine, senna, 591–592  
*S-Allyl cysteine*, garlic, 473  
 Almonds  
 botanical description, 761  
*Laetrile®* extracts, 761–762  
 poisonous parts, 762  
*Aloe vera*, 370–380, 414  
*Aloin*, 378–380  
*Alternaria* species  
 in air, 320  
 classification and identification, 320–324  
*Amanita* mushrooms  
 mycological identification and classification, 265–268  
*Pantherina* syndrome, 298–302  
*Paxillus* syndrome, 312–315  
 poisonous parts, 273–275  
 silibinin as antidote, 554  
*Amanitins*  
 amanita mushroom, 266–274  
*Amatoxin*  
 amatoxin-containing mushrooms, 265–284  
 amatoxin poisoning, 268–280  
*Ambient air*  
 fungal spore concentrations, 321–324  
 mycotoxins in, 319–320  
*Amebiasis*, 191–192  
*American short-tailed shrew*, 1133  
*American trypanosomiasis*, kissing bug, 971  
*Amines*, bee venom, 957–958  
*α-Amino-5-methyl-3-hydroxyisoxazolone-4-propionate (AMPA)*, domoic acid toxicity, 215  
*1-Aminocyclopropanol*, coprine toxins, 295  
*β-Aminopropionitrile*, osteolathyrism, 807–808  
*Amnesic shellfish poisoning* and domoic acid, 212–217  
*Amphetamine derivatives*, myristicin metabolites and, 68  
*Amphibians*. *See* Frogs; Toads; specific species  
*Amygdalin*  
 cyanogenic foods, 45–50  
 fruit kernels, 45  
*Laetrile®* derivatives, 762  
*Anabaena* species, neurotoxins, 184  
*Anabasine*, 810–813  
*Analgesics*, rattlesnake venom, 1039–1040  
*Anaphylactoid reactions*  
 ants, wasps, and bees, 961–963  
 fly and mosquito bites, 981  
*Latrodectus* antivenom, 931  
 rattlesnake venom, 1032  
*Anatoxin-a*, cyanobacteria, 184  
*Anemonin*, physiochemical properties and toxicity, 691–692  
*Anethole*, chemical structure, 608–609  
*Angelica sinensis*, 461–463  
*Animals and animal products*. *See also* Insects; Reptiles  
 aflatoxins, 327  
*Bacillus cereus*, 89  
*Campylobacter jejuni*, 94  
*Clostridium botulinum*, 104  
*Clostridium perfringens*, 114–115  
 dog laurel toxicity and, 845–846  
*Escherichia coli*, 121  
 food additives and sensitivities, 23  
 fumonisins, 342–343  
 gastrointestinal viruses, 204  
*Giardia lamblia*, 197–198  
 grayanotoxins in, 871  
 lantana toxicity in, 868  
*Listeria monocytogenes*, 133  
 ochratoxins, 344–347  
 oleander poisoning in, 849  
*Salmonella* in, 142  
*Shiga enterotoxins*, 151  
*Staphylococcus aureus*, 156–157  
*Streptococcus* species, 162  
 tannins, 894–895  
 tetrodotoxins in, 247–248  
*Vibrio* species, 167–168  
*Yersinia enterocolitica*, 175  
*Anisatin*, chemical structure, 608–609  
*Anthozoa*, classification and characteristics, 1096–1098  
*Anthranoid laxatives*, cascara, 415–419  
*Anthraquinone derivatives*  
 cascara, 415–419  
 mushrooms, 290–293  
 rhubarb poisoning, 86  
*Antibiotics*, food additives and sensitivities, 27–28  
*Anticholinergic signs*,  
 botulism, 106–107  
 bulbs, 705  
 burdock root, 401  
*Datura* species, 777–781  
*Escherichia coli*, 127  
 European bittersweet, 804  
 isoxazole-containing mushrooms, 301  
 lupine, 786  
 nutmeg, 68–69  
 puffer fish, 249  
 snowdrop, 712–714

## INDEX

- Anticholinergic signs (*cont'd*)  
  valerian, 620  
  water hemlock, 824
- Antidotes  
  belladonna alkaloid toxicity, 781  
  ciguatoxins, 244  
  colchicine toxicity, 699  
  eugenol toxicity, 440–441  
  nicotine toxicity, 813  
  oleander toxicity, 853–854  
  pennyroyal toxicity, 566  
  ricin toxicity, 723–724
- Antihistamines  
  hymenoptera sensitivity reactions, 963–964  
  toxicodendron dermatitis, 683
- Antimicrobial agents, tea tree oil, 658–660
- Antioxidants  
  food additives and sensitivities, 25–26  
  rosemary, 574–575
- Antitoxins, botulism treatment, 108–109
- Antivenin (Crotalidae) polyvalent  
  rattlesnake antivenom, 1036–1038
- Antivenom  
  cobra, 1052  
  Elapidae, Australia, 1057–1059  
  jellyfish, 1090–1092  
    man-of-war, 1096  
  *Latrodetus* envenomation, 930–931  
  lionfish, 1119–1120  
  *Lonomia* caterpillars, 993  
  scorpionfish, 1119–1120  
  scorpions, 915, 920–922  
  snakes  
    Colubrid family, 1062  
    coral snake, 1049–1051  
    Crotalidae polyvalent immune (Ovine) Fab antivenom, 1035–1036  
    rattlesnake, 1029, 1031–1043  
    sea snake, 1076  
    venom detection kit, 1056  
    viper, 1013, 1018, 1020–1021, 1024  
      pit viper, 1044, 1046  
  spiders, 930–934, 940  
  stonefish, 1119–1120
- Aortic aneurysms, neurolathyrism, 63–64
- Aphanizomenon* species, neurotoxins, 185
- Apigenin  
  biapigenin  
    St. John's wort, 601  
  chamomile, 426–427
- garlic, 472  
gingko tree, 490  
hawthorn, 511  
methyl apigenin  
  valerian, 618, 620  
passionflower, 559  
rosemary, 575–576  
skullcap, 597  
yarrow, 624
- Apyrases, bugs, 971
- Arctigenin, burdock root, 400–401
- Arctium lappa*. *See* Burdock root
- Argemone oil, epidemic dropsy, 9–10
- Argiope* genus (black-and-yellow garden spider), 941
- Aristolochic acid, 382–385
- Armed (banana) spider, 931–932
- Arrhythmia. *See* dysrhythmia
- Arthritis  
  aconite, 737  
  aloe vera, 378  
  *Aristolochia* species, 383  
  borage, 397–398  
  cactus, 838  
  cat's claw, 421–422  
  *Campylobacter jejuni*, 98–99  
  catfish, 1123  
  capsaicin, 72  
  chaparral, 430  
  cinnamon, 40  
  colchicine, 694  
  comfrey, 450  
  *Cyclospora*, 196  
  echinacea, 568, 571  
  feverfew, 466  
  freshwater fish, 1125  
  germander, 478  
  *Giardia lamblia*, 198  
  ginger, 483  
  gingko tree, 489  
  licorice, 538  
  moths and butterflies, 992  
  mycotoxins, 326  
  *Salmonella*, 144–146  
  Sea urchins, 1108  
  *Shigella* species, 152  
  *Streptococcus* species, 164  
  *Yersinia enterocolitica*, 176–177
- β-Asarone, calamus sources, 403–404
- Ascospores, fungal genera and species, 320–324
- Aspartame, clinical response to, 24–25
- Aspergillus* species  
  aflatoxins in, 328  
  in air, 320  
  food sources, 318–319  
  ochratoxins, 343–347  
  patulin, 347–348
- Assassin bug  
  behavior, 970–971  
  clinical response, 971  
  geographic distribution, 970  
  identifying characteristics, 969  
  venom composition and apparatus, 971
- Asteraceae family  
  airborne contact dermatitis, 685  
  allergic contact dermatitis, 678–679  
  burdock root, 400  
  camomile, 425  
  coltsfoot, 446  
  milk thistle, 553  
  feverfew, 465, 467  
  pine thistle, 514  
  purple coneflower, 568–569, 572  
  sunflower, 449, 451  
  tansy, 614–616  
  white snakeroot, 826  
  yarrow, 623–624
- Asthma preparations, *Datura* plants, 778–781
- Astroviruses, taxonomy and classification, 203
- Asymptomatic carriage, *Salmonella* poisoning, 145
- δ-Atracotoxins, 932–934
- Atractaspidae. *See also* specific species  
  classification and characteristics, 1013–1014
- Atractyloside  
  diagnosis and treatment, 516  
  historical background, 514  
  physiochemical properties, 515  
  source, 514–515
- Atrax/Hadronyche* species, 932–934
- Atraxotoxin, Australian funnel-web spiders, 932–934
- Atropine  
  aconite poisoning, 740  
  belladonna alkaloids, 781  
  burdock root, 400–401  
  ciguatera poisoning, 244  
  chemical structure, 778  
  colchicine, 696  
  *Datura* species, 778–779  
  death camas, 709  
  deadly nightshade, 780  
  frogs, 1002  
  jin bu huan, 520  
  muscarine poisoning, 306  
  oleander poisoning, 850, 853–854  
  pantherina syndrome, 301  
  pokeweed, 802  
  puffer fish poisoning, 250

- Rhododendron* species, mad honey, 872  
 scorpion envenomation, 921  
*Solanum* species, 804  
 snowdrop, 713  
 tree tobacco, 813  
*Veratrum* alkaloids, 816–817  
**Attachment-invasion locus (Ail)**  
 factor, *Yersinia enterocolitica*, 175–176  
**Australian funnel-web spiders**, 932–934  
**Autumn crocus**, colchicine, 693–700  
**Ayurvedic medicine**  
 calamus, 404  
 senna, 591–594  
**Azadirachtin**  
 chemical composition, 649–650  
 toxicity, 649–651  
**Azaspiracid poisoning**, 218–221
- Bacillus cereus**, 89–95  
**Bacteremia**  
*Campylobacter jejuni*, 96–99  
*Salmonella* poisoning, 141–144  
**Baicalin**, chemical structure, 597–598  
**Balkan endemic nephropathy**, ochratoxins, 345–347  
**Barbados nut**, 829–830  
 Barbaloin, chemical structure, 415–416  
**Barbourin**, pygmy rattlesnake, 1041  
**Bark scorpion**, classification and behavior, 914–915  
**Basidiomycetes**, amatoxin identification and classification, 265  
**Basidiospores**, fungal genera and species, 320–324  
**Batrachotoxin**, Colombian poison-dart frog, 1000–1002  
**Beaded lizard**, 1008–1011  
**Bedbug**, 969–972  
**Bees**, 956–965  
*Begonia* species, 747–748  
**Behavior patterns**  
 bark scorpion, 914–915  
 bees, 956  
 bugs, 970–971  
 caterpillars, 990–991  
 catfish, 1122  
 centipedes, 951  
 classification and toxicity, 1128–1130  
**Colorado River toad**, 997  
 cone shells, 1078  
 fire ants, 957
- fire corals, 1094  
 fleas, 976  
**Gila monster** and beaded lizard, 1009  
 jellyfish, 1087–1088  
*Latrodectus* spiders, 928  
 lice, 984  
 lionfish, scorpionfish, and stonefish, 1117  
*Loxosceles* spiders, 936  
 mosquitoes and flies, 980  
**Portuguese man-of-war**, 1095  
 rattlesnakes, 1027–1028  
 sea snakes, 1074–1075  
 wasps and yellow jackets, 956–957  
 weever fish, 1120  
**Belladonna alkaloids**, 776–783  
**Benzoic acid**, food additives and sensitivities, 26  
**Berberine**, chemical composition, 505–506  
**Berne virus**, animal sources for, 204  
**Bilobalide**, toxicokinetics, 491–492  
**Biomarkers**  
 aconite poisoning, 739–740  
 aflatoxin, 331  
 akee fruit, 37  
*S-allyl mercapturic acid*, 474  
 amatoxin, 277  
 anisatin/veranisatin, 609  
 aristolochic acid, 385  
*Bacillus cereus*, 92  
 brevetoxins, 229–230  
 camphor toxicokinetics, 410–411  
*Campylobacter jejuni*, 99  
*Clostridium botulinum*, 108  
*Clostridium perfringens*, 117  
 colchicine, 697–698  
 cyanobacteria, 187–188  
 cyanogenic glycosides, 50, 765  
 diarrhetic shellfish poisoning, 224  
 domoic acid, 216  
 eosinophilia-myalgia syndrome, 16  
 ephedra alkaloids, 549  
 epidemic dropsy, 13  
 ergotism, 339  
*Escherichia coli*, 126  
 eugenol, 440  
 food additives and sensitivities, 29–30  
 gastrointestinal viruses, 207  
 ginkgotoxin, 493  
 glycyrrhetic acid, 542  
 goldenseal, 507  
*Listeria monocytogenes*, 137  
 nicotine, 812  
 ochratoxins, 347  
 oleander, 852–853  
 puffer fish tetrodotoxins, 250
- rhubarb poisoning, 86–87  
 ricin, 723  
*Salmonella* poisoning, 145  
 scombrotoxins, 258–259  
*Shigella* toxins, 153  
*Staphylococcus aureus*, 159  
*Streptococci*, 164  
 toxic oil syndrome, 10–11  
 turpentine, 670  
 valerian, 621  
**Veratrum** alkaloids, 816–817  
*Vibrio* species, 170  
*Yersinia enterocolitica*, 177  
 yusho/yu-cheng diagnosis, 7–8
- Biotransformation/elimination**  
 aflatoxins, 329  
 amygdalin toxicokinetics, 764  
 baicalin, 598  
 camphor toxicokinetics, 409  
 cascara anthrones, 417–419  
 colchicine, 695  
 cyanogenic glycosides, 50  
 ephedra alkaloids, 547–548  
 ergot and related compounds, 337  
 ginger compounds, 485  
 ginkgotoxin, 492  
 glycyrrhetic acid, 541–542  
 hypericum extract, 603  
 kava lactones, 528  
 limonene, 639–640  
 nicotine, 811  
 pyrrolizidine alkaloids, 453–454  
**Bisabolol**, chamomile, 426–427  
**Bitis venom**, composition and toxicity, 1018–1020
- Black cherry**  
 botanical description, 761  
 poisonous parts, 762–763  
**Black cohosh**, 388–393  
**Black locust**, botanical description and toxicity, 881–882
- Black pepper**  
 aspiration, 74  
 chemical composition and properties, 72
- Blister beetles**, 972–975  
**Blue cohosh**, 394–396  
**Blue-ringed octopus**, 1081–1082  
**β-Methylamino-L-alanine (BMAA)**, cyanobacteria, 181  
 cycad seed toxicity, 54–56
- Body lice**. *See Lice*
- Borago officinalis*, 397–399
- Boraginaceae**  
 borage, 450  
 pyrrolizidine-containing plants, 449–451  
 comfrey, 449–451

## INDEX

- Botulinum toxins. *See also Clostridium botulinum*, 103–110
- Boxwood, botanical description and toxicity, 832
- Breda virus, animal sources for, 204
- Brevetoxins  
amnesic shellfish, 213  
ciguatera fish, 240, 242  
ciguatoxins, moray eel, 1113  
neurotoxic shellfish poisoning, 227–230
- Bromocriptine, medicinal uses, 336
- Bronchiolitis obliterans, diacetyl exposure, 26
- Brown recluse. *See Loxosceles* (brown recluse) spider
- Buckeye, botanical description and toxicity, 883–884
- Buckthorn, 834–836
- Budd-Chiari syndrome, pyrrolizidine alkaloids, 454
- Bufadienolide  
digitalis toxins, 774  
oleander, 848–849  
toads, 997–1000  
*Urginea sanguinea*, 857–858
- Bufalin, toxicokinetics, 998
- Bufotenin, toads, 997–999
- Bugs, 970–975. *See also* specific types of bugs
- Building-related illness  
mold growth and, 323–324  
trichothecene mycotoxins, 357
- Bulbs, 703–706  
Buttercup family, 690–692  
colchicine-containing plants, 693–701  
contact dermatitis from, 684–685
- daffodils, 703–706
- death camas, 707–709
- kaffir lily, 710–711
- narcissus, 703–706
- snowdrop, 712–714
- zephyr lily, 716–717
- Burdock root, 400–402
- Cactus, 837–840  
Cade oil, basic properties, 522–524
- CadF cell surface protein,  
*Campylobacter jejuni*, 97–99
- Calamine lotion  
flea bites, 977–978  
toxicodendron dermatitis, 683
- Calamus, 403–406  
Calcium channels  
ciguatera poisoning, 240
- cone shells  
clinical drugs, 1078, 1080  
conotoxin, 1079–1080
- cyanobacteria, 185
- fire corals, 1094
- peppermint oil, 655
- red whelk, tetramine 254
- scorpion venom, 920
- snake venom, 1029
- spider venom, 932
- St. John's wort, 603
- Calcium oxalate  
agave plant, 752  
begonia, 747–758  
cactus, 838–839  
century plant, 751–752  
cranberry juice, 458–459  
*Dieffenbachia* species, 769–771  
mandrake, 778
- narcissus, 704
- oleander, 850
- plant  
dermatitis, 678  
mineral, 838  
rhubarb, 85–87  
senna, 592  
spinach, 85  
tulip, 684
- Caliciviruses, taxonomy and classification, 201
- Camphor, 407–413
- Campylobacter jejuni*, 96–102
- Cancer references  
aflatoxin, 325, 331  
allium vegetables, 442  
aristolochic acid, 384–385  
*Aristolochia* species, 385
- bladder  
saccharin, 25  
sodium cyclamate, 25
- breast  
copperhead venom, 1042  
mistletoe, 792  
paclitaxel, 901
- carcinogenesis and  
aflatoxin, 325, 327, 329–331  
aristolochic acid, 384–385  
*Aristolochia* species, 385  
butylated hydroxyanisole, 26
- calamus, 403–405
- cascara, 418
- cinnamon, 42
- citronella oil, 633
- comfrey, 454
- cycad flour, 55–56
- dihydrosafrole, 584
- eugenol, 440
- food additives, 23–27
- fumonisin, 325, 343
- glycyrrhizic acid, 541
- licorice, 541
- limonene, 641
- ochratoxin, 325
- polychlorinated biphenyls (PCBs), 6
- pyrrolizidine alkaloids, 446, 452, 454,
- safrole, 462, 583–584
- sassafras, 583
- senna, 594
- tea tree oil, 661
- turpentine oil, 669
- esophageal  
safrole, 29  
cinnamon, 29
- chaparral, 431–432
- colon  
nitrates and nitrites, 27
- Color Additives Amendment (1960), 22
- colorectal  
pseudomelanosis coli, 418  
laxative abuse, 418  
senna, 594
- coltsfoot, 447
- Food Additives Amendment (1958), 22
- garlic, 472
- gastric  
chili pepper, 73  
nitrates and nitrites, 27
- gyromitrin-containing mushrooms, 287
- hepatic  
safrole, 29  
cinnamon, 29  
hepatitis B, 331
- liver  
aflatoxin, 187, 331  
cyanobacteria, 187  
fumonisin, 343  
hepatitis B, 331  
safrole, 584
- nitrates, 24
- oral  
cinnamon-containing gum, 42  
nitrates and nitrites, 27
- polychlorinated biphenyls (PCBs), 6
- renal  
aristolochic acid, 384–385  
ochratoxins, 346
- salmonella  
antibiotics, 145
- treatment  
anguidine, 355
- Aristolochia* species, 383

- Barbados nut, root, 829  
 cat's claw bark, 421  
 chaparral, 430  
     nordihydroguaiaretic acid, 429  
 copperhead venom, 1042  
 daphne, 843  
 ginseng, 498  
 goldenseal, 505  
 IL-2 immunomodulation  
     chemotherapy, 158  
     rhubarb, 84  
 Laetrile®, 760  
 lavender, 534  
 limonene, 637, 639–641  
 mayapple, 788  
 mistletoe, 792–793  
 pokeweed, 800  
 ricin, 721  
 sassafras, 583  
 skullcap, huang-qin, 596  
 spurge family, 755  
 squirting cucumber, 876  
*Veratrum* alkaloids, 815  
 wisteria, 879  
 yew, taxanes, 899, 901  
     zephyr lily, 716  
 trichothecene mycotoxins, 354,  
     357–358  
 turpentine oil, 669  
 urothelial  
     aristolochic acid, 384–385  
     aristolochic acid-containing herbs,  
         346  
     yu-cheng, 7  
 Cantharidin. *See* Blister beetles,  
     972–975  
 Capsaicin. *See* Pepper and capsaicin,  
     71–76  
 Capsid proteins  
     astroviruses, 203  
     rotaviruses, 202–203  
 β-Carbolines, chemical composition,  
     559–560  
 Carboxyatractyloside, chemical  
     composition, 515–516  
 Carcinogenesis. *See* Cancer references  
 Cardenolides  
     digitalis cross-reactivity, 774–775  
     oleander, 848–849  
     toads, 997–1000  
 Cardiac glycosides  
     common oleander, 848–849  
     diagnostic testing for, 850–852  
     toads, 997–998  
     yellow oleander, 854–856  
 Cardiovascular system. *See also* Veno-  
     occlusive disease  
     batrachotoxins, 1002  
     blue cohosh effects, 395–396  
     cleistanthin, 757–758  
     colchicine, 696–697  
     digitalis, 774–775  
     ergot alkaloid effects on, 338–341  
     Gila monster venom, 1010  
     jellyfish venom, 1089–1093  
     jin bu huan, 519–520  
     mycotoxins, 325  
     oleander, 849–854, 856  
     rattlesnake venom, 1030  
     scorpion venom, 918–921  
     taxine alkaloids, 900–902  
     toad venom, 1000  
     *Veratrum* alkaloid toxins, 817  
     viper venoms, Middle and Near  
         East/African vipers,  
         1018–1020  
     Carolina jessamine, 841–842  
     Cartilaginous fish, classification and  
         toxicity, 1128–1130  
     Cascara, 414–420  
     Cascaroside, 415–419  
     Cassava. *See* Cyanogenic foods, 44–53  
     Casticin  
         chemical structure, 435  
         medicinal uses, 434–435  
         toxicity, 435–436  
     Castor bean, 718–726  
     Catechols, toxicodendron dermatitis,  
         679–684  
     Caterpillars. *See* Moths and  
         butterflies, 988–995  
     Catfish, 1121–1124  
     Cathartics (laxatives)  
         aloe vera, 379–380  
         buckthorn, 834  
         colocynth, 443–444  
         cascara, 414–419  
         colchicine, 696  
         mayapple, 788  
         pokeweed, 800  
         rhubarb, 84  
         senna, 591–594  
     Cat's claw, 421–424  
     *Caulophyllum thalictroides*. *See* Blue  
         cohosh  
     Centipedes, 950–953  
     Central nervous system (CNS)  
         amatoxins and, 270  
         belladonna alkaloids, 779  
         camphor toxicity, 409–410  
         cicutoxin toxicity, 822–824  
         colchicine, 697  
         galanthamine/galantamine toxicity,  
             704–705  
         jin bu huan toxicity, 519–520  
         mycotoxins, 325  
     neurolathyridism in, 63–65  
     Pantherina syndrome, 298–302  
     podophyllotoxins, 790  
     scorpion venom toxicity, 918–921  
     star fruit intoxication, 612–613  
 Century plant, 751–753  
*Cerastes* venom, composition and  
     toxicity, 1018–1020  
 Cerebrospinal fluid (CSF), botulinum  
     toxins, 107  
 Cereulide toxin, *Bacillus cereus*, 90–92  
 α-Chaconine, solanine toxicity, 78–80  
 Chagas' disease, 971  
 Chamomile, 425–428  
 Chamomixin, Paxillus syndrome, 313  
 Chan Su medicine, 997  
 Chaparral, 429–433  
 Chaste tree, 434–436  
*Cheiracanthium* (running or sac  
     spiders), 941–942  
 Chelidonine, structure and properties,  
     874–875  
 Chemotherapy, taxine alkaloids,  
     901–902  
 Chiggers, classification and toxins,  
     909–911  
 Children, gastrointestinal viruses in,  
     205–206  
 Chili peppers. *See* Pepper and  
     capsaicin, 71–76  
 Chinaberry, botanical description and  
     toxicity, 886–887  
 Chinese herbal medicine and  
     aristolochic acid, 382–386  
     Chan Su, 997–1000  
     clove, 437–441  
     *Datura* plants, 778–781  
     dong quai, 461–463  
     ginger, 482–486  
     ginkgo tree, 488–494  
     ginseng, 497–501  
     goldenseal, 505–507  
     hawthorn, 510–513  
     jin bu huan, 518–520  
     jinyinhua, 863–864  
     licorice, 538  
     ma huang, 545–550  
     star anise, 607–610  
     *Veratrum* alkaloids, 815–817  
 Chiropods (multitentacled box-  
     jellyfish), 1090–1091  
 Chokecherry  
     botanical description, 761  
     poisonous parts, 763  
 Cholera toxins, *see* *Vibrio* species,  
     167–173  
 Chrysaloin, chemical structure,  
     415–416

- Cicutoxin  
  physiochemical properties, 822  
  mechanism of toxicity, 822–824
- Ciguatoxins. *See also* Ciguatera fish poisoning and ciguatoxins, 238–246
- Moray eels, 1113
- Cinnamomin, 408–409
- 1,8-Cineole, toxicokinetics, 646
- Cinnamomum camphora*. *See* Camphor
- Cinnamon, 39–43
- Citreoviridin, cardiac/nervous system damage, 325
- Citrinin, 332  
  renal toxicity, 325
- Citronella oil, 632–634
- Citrus oil, 635–643
- Cladosporium* species  
  in air, 320  
  classification and identification, 320–324
- Claviceps purpurea*  
  ergot and related compounds, 332–333  
  sources, 335
- Cleistanthin. *See* Cleistanthin, diterpene esters, and the spurge family, 754–759
- Clitocybe* mushrooms  
  acromelalgia (erythromelalgia), 315  
  classification and identification, 303–305  
  poisonous parts, 305
- Clostridium botulinum*, 103–113
- Clostridium perfringens*, 114–119
- Clove and eugenol, 437–442
- Cnidoblast, jellyfish venom, 1088–1089
- Coagulation and  
  amatoxin poisoning, 278, 280  
  barbados nut, 829  
  bees, wasps, and ants, 961, 964  
  blister beetles, 974  
  caterpillar venom, 993  
  chinaberry, 887  
  clove oil poisoning, 440  
  colchicine poisoning, 697–698  
  Colubridae venom, 1060–1062  
  dong quai, 463  
  Elapidae, Australia, 1054–1059  
  *Escherichia coli*, 127  
    hemolytic-uremic syndrome, 124  
  eugenol, 439  
  garlic, 473  
  germander, 480  
  Gila monster, 1010  
  ginger, 485  
  gingko tree, 492
- ginseng, 500
- gyromitrin poisoning, 288
- Loxosceles* spider venom, 937–940
- mayapple, 791
- moths and butterflies, 991, 993
- mycotoxins, 325, 354
- pennyroyal oil, 565
- sea snakes, 1075
- spider bites, 933, 940
- terrestrial snakes  
  Australian elapid, 1056–1058  
  Colubrids, 1059–1062  
  pit viper venom  
    Asia, 1045–1046  
    Central and South America, 1043–1044  
    rattlesnake venom, 1030–1033, 1036–1041  
    viper venom, 1014, 1018–1021  
  toxic oil syndrome, 11
- Cobras  
  Asia, 1052–1053  
  Middle and Near East/Africa, 1051–1052
- Colitis, *Entamoeba histolytica*, 191–193
- Collagen tissue disease, osteolathyrism, 807–808
- Colocynth, 443–445
- Colombian poison-dart frog, 1000–1002
- Colony-forming units (CFUs), fungal spore concentrations, 321–324
- Colorado River toad, 996–1000
- Coloring agents, food additives and sensitivities, 28–29
- Coltsfoot, 446–448
- Colubridae, 1059–1062  
  geographic distribution, 1059  
  habitat/characteristics, 1059  
  venom composition and apparatus, 1059–1062
- Comfrey. *See* Comfrey and other pyrrolizidine-containing plants, 449–457
- Complex muscle action potentials (CMAPs), puffer fish tetrodotoxins, 248
- Cone shells, 1078–1081
- Conium* alkaloids. *See* Poison hemlock, 796–799
- Conotoxins, cone shell venom, 1079–1081
- Contact dermatitis. *See* Dermatitis
- Convulsions. *See* Seizures
- Copperhead snakes, 1041–1042
- Coprine. *See* Inky cap and coprine toxicity, 294–297
- Corals  
  fire corals, 1093–1094  
  hard coral, 1097  
  soft coral, 1097–1098
- Coral snakes  
  Central and South America, 1050–1051  
  North America, 1046–1050
- Coronavirus, taxonomy and classification, 202
- Cortinarius* mushrooms  
  classification and identification, 307–308  
  nephrotoxicity, 308–310  
  poisonous parts, 308
- Cottonmouth snakes, 1042–1043
- Cowitch. *See* Cowitch and horse eye bean, 727–728
- Cranberry, 458–460
- Crotalidae polyvalent immune (Ovine) Fab, rattlesnake antivenom (CroFab<sup>TM</sup>), 1034–1036
- Crotalinae. *See* Pit vipers
- Cryptosporidiosis, mechanisms, diagnosis and treatment, 193–195
- Cryptosporidium parvum*, 193–195
- Cucurbitacins  
  *Begonia* species, 747–748  
  chemical structure and toxicity, 876–877  
  colocynth, 443–444  
  squirtng cucumber, 876–877
- Current Good Manufacturing Practices (CGMP), historical overview, 5
- Cutaneous loxoscelism, 937–938
- Cyanobacteria, 181–199
- Cyanogenic foods, 44–53
- Cyanogenic plants, 760–767
- Cycad seeds, 54–58
- Cycasin, 47
- Cyclic AMP (cAMP), *Vibrio* species, 169
- Cyclospora cayetanensis*, 195–197
- Cyclosporiasis, 195–197
- Cylindrospermopsin, cyanobacteria, 182–188
- Cytisine  
  *Laburnum* species, 889–890  
  mescal beans, 733–734
- Cytochrome P450 enzymes and  
  aflatoxin biotransformation, 329  
  aristolochic acid, 384–386  
  cat's claw, 423  
  colchicine, 695–696  
  cranberries, 459–460

- eugenol, 439–440  
 ginkgotoxin, 492–493  
 limonene, 639  
 nicotine and, 811  
 pyrrolizidine alkaloid  
     biotransformation, 453–454  
 valerian, 620  
**Cytokines**, *Staphylococcus aureus*, 158  
**Cytotoxicity**  
*Loxosceles* spider venom, 936–939  
 viper venoms, Middle and Near East/African vipers, 1018–1020
- Daffodils.** *See* Narcissus bulbs  
**Daphne**, 843–844  
**Datura.** *See* Jimson weed and other belladonna alkaloids, 776–783  
**Deadly nightshade.** *See* *Datura*  
**Death camas**, 707–709  
**Decontamination**  
     aconite poisoning, 72  
 Akee fruit, 37  
 amatoxins, 276  
 belladonna alkaloids, 781  
 camphor, 411  
 cicutoxin, 824  
 ciguatoxins, 244  
 colchicine, 699  
 ergot, 340  
 jellyfish, 1092  
 nicotine, 812  
 oleander, 853  
 pennyroyal, 566  
 podophyllotoxins, 790  
 rhubarb poisoning, 89  
 ricin, 723  
 toxicodendron dermatitis, 683  
**Dehydration assessment**,  
     gastrointestinal viruses, 207  
**Dendrolimiasis**, caterpillar venom, 992–993  
**Deoxynivalenol (DON)**,  
     trichothecene, 349–358  
**Dermatitis.** *See also* Skin effects  
     cantharidin, 973–974  
     caterpillar venom, 991–993  
     century plant, 751–572  
     daffodil bulbs, 704–705  
     limonene, 639–641  
     plant products, 677–687  
         airborne contact phytodermatitis, 685  
         allergic phytodermatitis, 678–679  
         bulbs, 684–685  
         irritant contact dermatitis, 677–678  
     phytophotodermatitis, 685–687  
     toxicodendron dermatitis, 679–684  
     trees, 685  
     sponge toxins, 1103  
     spurge family toxins, 757–758  
     tansy exposure, 615–616  
     tea tree oil, 659–660  
     *Wisteria* species, 879–880  
**Diabetes mellitus**, germander, 477–479  
**Diacetoxyscirpenol (DAS)**  
     clinical responses to, 355  
     trichothecene, 349–358  
**Diacetyl**, bronchiolitis obliterans, 26  
**Diarrheal toxins**  
     *Bacillus cereus*, 90–92  
     *Yersinia enterocolitica*, 174–178  
**Dieffenbachia** species, 768–772  
**Difuranocoumarin derivatives**,  
     aflatoxins, 327  
**Digitalis.** *See* Digitalis-containing flowers, 773–775  
     common oleander, 848–854  
     epidemic dropsy, 13  
     *Veratrum* alkaloids, 817  
     yellow oleander, 854–856  
     yew, 900  
**Dihydroergotamine (DHE)**, medicinal uses, 335–336  
**Dihydroergotoxine mesylate**,  
     medicinal uses, 336  
**Dihydrosanguinarine**, epidemic dropsy, 12  
**Dinoflagellates**  
     ciguatoxins, 238  
     paralytic shellfish poisoning,  
         saxitoxins, 231–232  
**Dinophysistoxins (DTX1/DTX2)**,  
     diarrhetic shellfish poisoning, 222–224  
**Dinophysis**, diarrhetic shellfish poisoning, 222  
**Distribution half-life**  
     baicalin, 598  
     camphor, 409  
     colchicine compounds, 695  
     ephedra alkaloids, 547  
     ergot and related compounds, 337  
     ginkgotoxin, 492  
**Diterpene compounds**  
     esters, 754  
         spurge family, 755–756  
     *Aristolochia* species, 384  
     *Atractylis* species, 515  
     chaste tree, 485  
     germander, 479  
     juniper oil
- α-Pinene, 523  
 lactones  
     ginger, 483  
 gingko tree,  
     ginkgolides, 490  
 rhododendron  
     grayanotoxin, 870  
 rosemary, 575–576  
 skullcap, 598  
 yellow bird-of-paradise, 749  
     yew  
         taxicins, 900  
 Djenkol bean, 59–61  
**Dogbane family**, 847–860  
     common oleander, 847–854  
     odollam tree, 857–858  
     *Urginea sanguinea*, 857–858  
     yellow oleander, 854–857  
**Dogfish**, 1124  
**Dog laurel**, 845–846  
**Domoic acid.** *See also* Amnesic shellfish poisoning and domoic acid, 212–217  
**Paxillus syndrome**, 313–314  
**Dong quai**, 461–463  
**Dracotoxin**, weever fish, 1120–1121  
**Drug interactions**  
     amatoxins, 275  
     colchicine, 695  
     *Echinacea* species 571–572  
     ephedra alkaloid, 548  
     ergot, 337–338  
     feverfew, 467  
     ginger, 485  
     ginkgotoxin, 492–493  
     ginseng, 500–501  
     kava lactone, 528  
     licorice, 541  
     limonene, 639  
     passionflower extract, 560  
     peppermint oil, 655–656  
     saw palmetto, 588  
     silibinin, 555–556  
     skullcap, 598  
     St. John's wort, 603–604  
     valerian, 620  
**Dye materials**, tung oil, 663–664  
**Dysrhythmia (Arrhythmia)**  
     aconite, 738–740  
     anticholinergic poisoning, 781  
     colchicine, 696  
     coprine toxicity, 296  
     death camas, 709  
     ephedra alkaloids, 548  
     epinephrine, 963  
     ergotamine, 240  
     ethanol, 296  
     frog poisoning, 1002

# INDEX

- Dysrhythmia (Arrhythmia) (*cont'd*)  
funnel-web spider envenomation, 933  
goldenseal, 507  
hawthorn extract, 512  
jellyfish envenomation, 1090, 1092  
ma huang, 548  
mistletoe tea, 794  
oleander poisoning, 853, 856–857  
 pokeweed poisoning, 817  
 puffer fish ingestion, 250  
*Rhododendron* species,  
 grayanotoxins, 871–872  
scombrotoxin, 257  
scorpion envenomation, 919  
shigellosis, 153  
spurge family (*Cleistanthus collinus*), 757–758  
stingray envenomation, 1129  
stonefish envenomation, 1119  
toad venom, 999  
*Veratrum* alkaloids, 804  
*Vibrio cholerae*, 169–170  
water dropwort, 823  
water hemlock, 823  
yew berry ingestion, 901
- E-cadherins, *Listeria monocytogenes*, 134–135  
Encephalopathy, neem oil toxicity, 649–651  
*Echinacea* species. *See* Purple coneflower and other *echinacea* species, 568–573  
*Echis* venom, composition and toxicity, 1018–1020  
Eggplant. *See* Solanine toxicity  
Eggs, *Salmonella* contamination, 142–143  
Elapidae  
Asia, 1052–1053  
Australia, 1053–1059  
geographical distribution, 1053–1054  
habitats/characteristics, 1054  
venom composition and apparatus, 1054–1059  
Central and South America, 1050–1051  
Middle and Near East/Africa, 1051–1052  
North American coral snakes, 1046–1050  
geographic distribution, 1046–1048  
habitats and characteristics, 1048–1049  
treatment, 1049–1050  
venom toxins and apparatus, 1049
- Elderberry. *See* Cyanogenic plants and Laetrile®, 762–767  
Eleostearic acid, chemical structure and toxicity, 664  
Elimination  
aflatoxins, 329–330  
amatoxins, 274  
baicalin, 598  
belladonna alkaloid toxins, 781  
camphor, 411  
cicutoxin, 824  
colchicine, 695  
ephedra alkaloids, 548  
ergot and related compounds, 337, 340  
ginkgotoxin, 492  
glycyrrhetic acid, 541–542  
hypericum extract, 603  
kava lactones, 528  
limonene, 639  
nicotine, 812–813  
podophyllotoxins, 790  
rattlesnake venom, 1034  
Emetic bulbs, 703–705  
Emetic syndrome  
*Bacillus cereus*, 89–91  
*Staphylococcus aureus*, 158–159  
Emulsifiers, food additives and sensitivities, 28  
Endotoxins, cyanobacteria, 183–188  
End-stage renal disease (ESRD), enterohemorrhagic *E. coli* (EHEC), 124  
*Entamoeba histolytica*, 191–193  
Enteric adenoviruses, taxonomy and classification, 203  
Enteric fever, *Salmonella* poisoning, 145  
Enteroaggregative *Escherichia coli*, 124–125  
Enterocolitis, *Salmonella* poisoning, 144  
Enterohemorrhagic *E. coli* (EHEC), 122–131  
Enteroinvasive *E. coli* (EIEC), 123–130  
Enteropathogenic *E. coli*, 123–131  
Enterotoxigenic *E. coli* (ETEC), 123–131  
Environmental exposure  
aflatoxins, 328  
*Bacillus cereus*, 89  
botulinum toxins, 103–105  
*Campylobacter jejuni*, 96  
*Clostridium perfringens*, 114  
cyanobacteria, 182–183
- ergot and related compounds, 335  
*Escherichia coli*, 120  
food additives and sensitivities, 22–23  
fumonisins, 342  
gastrointestinal viruses, 204  
*Listeria monocytogenes*, 135  
ochratoxins, 344–345  
Shiga enterotoxins, 152–153  
*Stachybotrys*, 351–352  
*Staphylococcus aureus*, 156  
*Streptococci*, 162  
trichothecene mycotoxins, 352  
*Vibrio* species, 167  
*Yersinia enterocolitica*, 174  
Eosinophilia, toxic oil syndrome, 11  
Eosinophilia-myalgia syndrome, 13–16  
*Ephedra* alkaloids. *See* Ma Huang, 546–552  
Ephedrine, chemical structure, 637–639  
Epidemic dropsy, 11–13  
Epinephrine  
chemical structure, 637–639  
hymenoptera sensitivity reactions, 963  
Eptifibatide, pygmy rattlesnake, 1041  
Ergometrine, historical overview, 333  
Ergotamines, 335–338  
Ergot and related compounds, 332–340  
interactions, 337–338  
Ergotism, historical overview, 5, 332–333  
Erucism, caterpillar venom, 992  
Erythromelalgia, *Paxillus* syndrome, 315  
*Escherichia coli*, 120–132  
cranberries, 459–460  
β-Escin, buckeye, 883–884  
Estimated daily intake (EDI), food additives and sensitivities, 23–24  
Eucalyptus oil, 644–647  
Eugenol. *See* Clove and eugenol, 437–442  
European bittersweet, 803–805  
Exendins, composition, 1009  
Exfoliatins A/B, *Staphylococcus aureus*, 156–159  
Eye irritation, sea cucumbers, 1109
- Fabaceae family  
bird-of-paradise, 749  
black locust, 881  
cassava  
cyanogenic glycosides, 44–45

- cowitch, 727  
cyanogenic glycosides, 760  
golden chain tree, 889  
grass pea, 62  
horse eye bean, 727  
hound's tongue, 450, 452  
jequirity bean, 729  
licorice, 537  
lupines, 784  
mescal bean, 733  
pea, 806–807  
phytophotodermatitis, 686  
pyrrolizidine-containing plants, 449  
senna, 591  
sweet pea, 806  
Texas mountain laurel, 733  
wisteria, 879  
Falcarinol, 865  
False lupine. *See* Lupines and false lupine  
False morels, gyromitrin, 283–286  
Ferulic acid, dong quai, 462–463  
Feverfew, 465–469  
airborne contact dermatitis, 685  
Fibrolase, copperhead snakes, 1042  
Fire ants, 956–965  
Fire corals, 1093–1094  
Fireworms, 1109–1110  
First aid protocols  
chirodropids, 1091  
coral snake venom, 1049–1050  
Elapidae, Australia, 1057  
Irukandji syndrome, 1091–1093  
lionfish, scorpionfish, and stonefish, 1119  
rattlesnake venom, 1033–1034  
scorpion bites, 921  
sea snake venom, 1076  
Fish poisoning. *See also* Shellfish  
poisoning  
bony fish, 1115–1125  
cartilaginous fish, 1128–1130  
catfish, 1121–1124  
ciguatoxins, 238–246  
dogfish, 1124  
ichthyotoxic acute renal failure, 1125  
lionfish, scorpionfish, and stonefish, 1115–1120  
porcupine fish, 1124–1125  
rabbitfish, 1124  
scombrotoxin, 256–260  
tetrodotoxin, puffer fish, 245–252  
toadfish, 1124  
weever fish, 1120–1121  
Flagellar antigens, *Listeria monocytogenes*, 134  
Flavonoid, flavonoids  
Allium species, 472  
garlic, 472  
antioxidants, 511  
cranberry, 459  
glycosides, ginkgo tree, 489–491  
hawthorn, 511  
passionflower, 559–560  
yellow bird-of-paradise, 749–750  
Flavonolignans  
chemical structure, 554–555  
milk thistle, 553–557  
Fleas, 976–978  
Fly agaric mushrooms  
classification and identification, 298–302  
*Pantherina* syndrome, 298–302  
poisonous parts, 301–302  
Flies. *See* Flies and mosquitoes, 979–982  
Food additives and sensitivities, 22–33  
aloe vera, 378  
calamus, 403–404  
cinnamon, 40–42  
cyanogenic glycosides, 50  
Food allergies, Paxillus syndrome, 312–315  
Food contamination  
aflatoxins, 328  
aristolochic acid, 385  
*Bacillus cereus*, 90  
botulinum toxins, 104, 106–107  
*Campylobacter jejuni*, 96  
*Clostridium perfringens*, 115  
cyanobacteria, 183  
ergot and related compounds, 335  
*Escherichia coli*, 121  
fumonisin toxins, 342  
gastrointestinal viruses, 204  
*Giardia lamblia*, 197–198  
historical overview, 5  
*Listeria monocytogenes*, 133–134  
mycotoxins, 318–319  
ochratoxins, 345  
*Salmonella*, 142  
Shiga enterotoxins, 151  
*Staphylococcus aureus*, 157  
*Streptococci*, 162–163  
trichothecene mycotoxins, 352–355  
*Vibrio* species, 168  
*Yersinia enterocolitica*, 175  
Food processing  
azaspiracid poisoning and toxins, 218–219  
*Bacillus cereus*, 90  
botulinum toxins, 104  
*Campylobacter jejuni*, 97  
ciguatoxins, 239  
*Clostridium perfringens*, 115  
eosinophilia-myalgia syndrome, 16  
epidemic dropsy, 12  
*Escherichia coli*, 121–122  
gastrointestinal viruses, 204  
*Listeria monocytogenes*, 134  
paralytic shellfish poisoning, saxitoxins, 232  
puffer fish tetrodotoxins, 248  
*Salmonella*, 143  
scombrotoxin, 256–257  
Shiga enterotoxins, 151  
*Staphylococcus aureus*, 157  
*Streptococci*, 163  
tetramine, in red whelk, 253–254  
toxic oil syndrome, 9  
*Yersinia enterocolitica*, 175  
yusho/yu-cheng epidemiology and, 6  
Food storage recommendations, food additives and sensitivities, 27  
Foreign body removal  
actus spines, 839  
Gila monster/beaded lizards, 1010–1011  
ticks, 912  
FoxA receptor, *Yersinia enterocolitica*, 176  
*Frangula purshiana*. *See* Cascara  
Frogs, Colombian poison-dart frog, 1000–1002  
Fructans, burdock root, 400–401  
Fruit kernels. *See* Cyanogenic foods, 44–53  
Fumonisin, 341–343  
Fungal poisoning. *See* Mushrooms, Mycotoxins  
caactus, 838–839  
Fungal spore concentrations, sampling techniques, 321–324  
*Fusarium* fungi  
food sources, 318–319  
Kashin-Beck disease, 326  
reproductive system toxicity, 326  
trichothecene toxins, 351  
zearalenone toxins, 357–358  
F wave latencies  
puffer fish tetrodotoxins, 250  
saxitoxin-induced paralytic shellfish poisoning, 235  
Galanthamine/galantamine compounds  
chemical structure, 704  
narcissus, 703–705  
snowdrop, 712–714  
*Galerina* mushrooms, 267–271  
*Gambierdiscus toxicus*, ciguatoxins, 238–239

## INDEX

- $\gamma$ -aminobutyric acid (GABA)  
cycad flour, 56  
ginkgo tree  
  ginkgotoxin, 491  
kavalactones, 526–527  
mushrooms  
  Pantherina syndrome, 298–302  
St. John's wort, 601  
star fruit intoxication, 612–613  
tetramine  
  red whelk, 254  
valerian, 618  
Garlic  
  botanical description, 470  
  historical overview, 470  
Gastrointestinal effects  
  amatoxins, 274–275  
  barbados nuts, 830  
  belladonna alkaloids, 780–781  
  black cohosh, 391–392  
  blister beetle, 974  
  camphor, 409–410  
  cascara anthrones, 417–419  
  cicutoxin, 822–824  
  ciguatoxins, 242  
  colchicine, 696  
  ergot and related compounds, 336–339  
  ginkgotoxin, 493  
  goldenseal, 507  
  jequirity bean, 730–731  
  mistletoe, 793–794  
  mushroom ingestion, 288–291  
  narcissus bulbs, 704–705  
  nicotine, 811–812  
  oleander, 856  
  podophyllotoxins, 790  
  pyrrolizidine alkaloids, 454  
  red baneberry, 745–746  
  ricin, 720–724  
  spurge family, 757–758  
  trichothecene mycotoxins, 354–355  
  turpentine, 669  
  zephyr lily, 716–717  
Gastrointestinal viruses, 202–211  
*Gelsemium sempervirens*  
  botanical description, 841  
  mechanism of toxicity, 841–842  
*Gelsemine*, structure and toxicity, 841–842  
  Germaneder, 477–481  
*Giardia lamblia*, 197–198  
*Gibberella* species  
  fumonisins, 341–343  
  trichothecene toxins, 351  
*Gila monster*, 1008–1012  
*Gilatoxin*, composition, 1009  
Ginger, 482–487  
  gingerols, 483–486  
Ginkgo tree, 488–496  
Ginseng, 497–503  
Ginsenoside compounds  
  chemical structure, 499–500  
  toxicokinetics, 500–501  
Glory lily, colchicine, 693–700  
Glucans, fungal growth and, 324  
Glucemannans, aloe vera, 378  
Glycoalkaloids  
  content, 805  
  nightshade, 804  
  solanine, 77–82  
  structure, 78  
Glycoproteins, black locust, 881–882  
Glycyrrhetic acid, 540–541  
Glycyrrhizic acid  
  chemical composition, 538–539  
  medicinal uses, 538  
  physical properties, 539  
Golden chain tree, 889–891  
Goldenseal, 504–509  
*Gonionemus vertens*, classification and characteristics, 1093  
Gonyautoxins  
  paralytic shellfish poisoning, 231–235  
  mechanism of toxicity, 233  
Granulomata, cactus spines, 839  
Grass pea. *See* Grass pea and neurolathyridism, 62–66  
Grayanotoxin. *See* Rhododendrons and grayanotoxins, 870–873  
Guar gum, food additives and sensitivities, 28  
Gummiferin, chemical composition, 515–516  
Gyromitrin. *See* False morel and gyromitrin poisoning, 285–289  
Haitian solenodon, 1133  
Hallucinogenic compounds  
  belladonna alkaloids, 778–781  
  calamus, 405  
  century plant, 751–752  
  ergot and related compounds, 332–333  
  mescal beans, 733–734  
  myristicin and, 68–69  
  Pantherina syndrome, 298–302  
Hard coral, classification and characteristics, 1097  
Harmala alkaloids, passionflower, 560  
Harvest mites, classification and toxins, 909–911  
Hawthorn, 510–512  
Head lice. *See* Lice  
Health surveillance, ochratoxins, 347  
Helothermine, composition, 1009  
Helvellic acid, gyromitrin toxins, 283–286  
Hemlock. *See* Poison hemlock; Water hemlock  
Hemolysins  
  hemolysin BL (HBL), *Bacillus cereus*, 91–92  
  *Listeria monocytogenes*, 135  
Hemolytic-uremic syndrome  
  abnormalities, 126–127  
enterohemorrhagic E. coli (EHEC), 123–125  
*Shigella* toxins, 151–152  
treatment, 127–128  
Henbane. *See* *Hyoscyamus niger* (Henbane)  
Hepatic aminotransferase, yusho/yu-cheng diagnosis, 8  
Hepatotoxicity (hepatitis, hepatotoxin)  
  aflatoxin exposure, 330–331  
  amatoxins, 272–274, 277–278  
  black cohosh, 391–392  
  cascara, 417–419  
  chaparral, 431  
  chaparral leaf, 479  
  clove, 439  
  comfrey, 449–455  
  cyanobacteria, 181–186, 183–186  
  *Echinacea* species, 571  
  gentian, 479  
  hops, 479  
  jin bu huan, 518–520  
  kavalactones, 527–529  
  mistletoe, 479  
  mycotoxins, 325  
  pennyroyal, 566–567  
  pyrrolizidine alkaloid-containing herbs, 479  
  ricin, 723  
  senna fruit extracts, 479  
  skullcap, 479, 598  
  tetrahydropalmatine, 518–520  
  valerian, 479  
Histamines  
  bee venom, 957–958  
  scombrotoxin, 254–257  
Holly, 861–862  
Honeysuckle, 863–864  
Hornets. *See* Vespids  
Horse eye bean, chemical structure and toxicity, 727–728  
Hot flashes, treatment of  
  black cohosh extract, 391

- Human botulism immune globulin (BabyBIG), 109
- Human immunodeficiency virus. *See AIDS*
- Hyacinth bulbs, contact dermatitis from, 684
- Hyaluronidase, bee venom, 957–958
- Hydrangea botanical description, 761 principal toxins, 762
- Hydrastine, chemical structure, 505–506
- Hydrazine compounds, gyromitrin, 284–286
- Hydroids. *See also* specific species classification and characteristics, 1093–1096
- Hydroxyaloin, aloe vera, 378
- Hydroxyanthraquinone compounds, rhubarb, 85
- Hydroxynitrile compounds, cyanogenic plants, 763
- Hyoscyamus niger* (Henbane), toxins in, 779
- Hyperbilirubinemia amatoxin-containing mushrooms, 278 castor beans, 721 chaparral, 432 colchicine-containing plants, 698 germander, 480 goldenseal, 507–508 kava, 529 pyrrolizidine alkaloids, 455 spurge family, 757 Water hemlock and water dropwort, 823
- Hyperforin, 603–604
- Hypericin, 603–604
- Hypericum* extract chemical composition, 601–602 mechanism of action, 602 medicinal uses, 600–601
- Hyperkalemia bees, 961 digitalis poisoning, 775 foxglove, 774 hornets, 961 mushrooms amatoxin-containing, 279 rhabdomyolysis, 314 odollam tree, 857 oleander, 849–850, 852–854, 856 pine thistle, atractyloside, 516 rattlesnake envenomation, 1039, 1056 rue, 581 sea snake envenomation, 1075–1076
- scorpion envenomation, 920 spider envenomation, 940 star fruit, 612 toad soap, 999 venom, 999–1000 wasps, 961
- Hypernatremia *Bacillus cereus*, 92 *Campylobacter jejuni*, 99 *Clostridium botulinum*, 108 *Clostridium perfringens*, 117 *Escherichia coli*, 126 *Listeria monocytogenes*, 137 pine thistle, atractyloside, 516 Shiga enterotoxins, 153 *Staphylococcus aureus*, 159 *Vibrio cholerae*, 170 *Yersinia enterocolitica*, 177
- Hyponatremia *Bacillus cereus*, 92 *Campylobacter jejuni*, 99 *Clostridium botulinum*, 108 *Clostridium perfringens*, 117 Colchicine poisoning, 698 *Escherichia coli*, 126 *Listeria monocytogenes*, 137 oleander, 853–854 pine thistle, atractyloside, 516 scorpion envenomation, 920 Shiga enterotoxins, 153 *Staphylococcus aureus*, 159 *Vibrio cholerae*, 170 *Yersinia enterocolitica*, 177
- Hyperoxaluria, rhubarb poisoning, 87
- Hypersensitivity reactions. *See also Anaphylactoid reactions* allergic phytodermatitis, 678–679 ants, wasps, and bees, 957–965 azadirachtin, 649–650 begonia compounds, 748 black locust toxins, 881–882 bugs, 971 jellyfish venom, 1089–1093 mycotoxin-induced pneumonitis, 324–326 neurolathyrism, 62 rattlesnake antivenom, 1035–1038 ricin/castor beans, 722 tea tree oil, 659–660 ticks, 912 toxicodendron dermatitis, 679–684 yarrow, 624–625
- Hypertriglyceridemia, toxic oil syndrome, 11
- Hypocalcemia argemone oil, epidemic dropsy, 13 colchicine poisoning, 698
- beaded lizard envenomation, 1010 dieffenbachia, oxalate-containing plants, 771 Gila monster envenomation, 1010 mushrooms, orellanine-containing, 310 rhubarb, 86 calcium oxalate, 86 oxalate poisoning, 87 scorpion envenomation, 920 sea snake envenomation, 1075–1076 spurge family, 756–758 toad venom, 999
- Hypofibrinogenemia, rattlesnake venom, 1030
- Hypoglycemia, Akee fruit, 37
- Hypoglycin A. akee fruit, 35 biomarkers, 37
- Hypokalemia Akee fruit, Jamaican vomiting sickness, 37 *Bacillus cereus*, 92 cascara, 417, 419 cleistanthin, 757–758 *Campylobacter jejuni*, 99 *Clostridium botulinum*, 108 *Clostridium perfringens*, 117 colchicine, 698 *Escherichia coli*, 126 licorice, 539–542 *Listeria monocytogenes*, 137 Monkshood, aconite poisoning, 740 mushrooms, gastroenteritis producing, 292 senna, 593–594 Shiga enterotoxins, 153 *Staphylococcus aureus*, 159 *Vibrio cholerae*, 169–170 *Yersinia enterocolitica*, 177
- Hypo sensitization, toxicodendron dermatitis, 683–684
- Hypotension cyanogenic compound ingestion, 49, 51 cycad seed ingestion, 56 food contamination *Staphylococcus aureus*, 158 *Streptococcus* species, 163
- mushroom ingestion *Coprinus* mushroom, 296 muscarine-containing mushrooms, 306
- Paxillus* syndrome, 313, 315
- seafood poisoning ciguatera, 213, 238–245 mussels, 216 paralytic shellfish, 233–235

# INDEX

- Hypotension (*cont'd*)  
  puffer fish, 213, 249–250  
  scombrotoxic fish, 213, 257–258  
solanine poisoning, 80
- Ibotenic acid  
  Pantherina syndrome, 298–302  
  mechanism of toxicity, 300
- Ichthyotoxic acute renal failure, 1125
- Illudin S, mushrooms, 285–288
- Immune system, mycotoxins, 325
- Immunoassays, oleander toxicity  
  diagnosis, 850–853
- Immunoglobulin A (IgA) antibodies,  
  *Yersinia enterocolitica*, 177
- Immunoglobulin E (IgE) antibodies  
  food additives and sensitivities, 27  
  mycotoxins and, 324–326
- Immunoglobulin G (IgG) antibodies,  
  *Yersinia enterocolitica*, 177
- Immunoglobulin M (IgM) antibodies,  
  *Yersinia enterocolitica*, 177
- Immunosuppressed patients,  
  gastrointestinal viruses in, 205
- Immunotherapy, hymenoptera  
  sensitivity reactions, 965
- Impala  
  botanical description, 514  
  diagnosis and treatment, 516  
  exposure sources, 514–515  
  historical background, 514  
  physiochemical properties, 515
- Infant botulism  
  dose response, 106–107  
  mechanism of toxicity, 105–106  
  treatment, 108–109
- Infectious diseases, mycotoxins and, 324–326
- Ingestion, turpentine toxicity, 668–669
- Inhalation  
  black pepper, 74  
  botulism, 108  
  chili peppers, 74  
  ricin/castor beans, 721–722  
  turpentine toxicity, 668–669
- Inky cap mushroom  
  classification and identification, 294  
  poisonous parts, 295
- Inocybe* mushrooms  
  classification and identification, 303–306  
  poisonous parts, 305
- Insects, mites and ticks, 909–912
- Intercellular spread protein (IcsA),  
  *Shigella* toxicity mechanisms, 152
- Internalin, *Listeria monocytogenes*  
  toxicity, 134
- Intestinal parasites  
  *Cryptosporidium parvum*, 193–195  
  *Cyclospora cayetanensis*, 195–197  
  *Entamoeba histolytica* and  
    amebiasis, 191–193  
  *Giardia lamblia*, 197–198
- Invasion plasmid antigen complex,  
  *Shigella* toxicity mechanisms, 151
- Involution, Paxillus syndrome, 313
- Ion channels, scorpion venom and, 916
- Irukandji syndrome, toxicity and  
  treatment, 1090–1093
- Ischemia  
  caterpillar venom, 991  
  centipede envenomation, 952  
  *Clostridium perfringens*, 116  
  colchicine, 696  
  cone shell envenomation, 1080  
  epinephrine, 963  
  gingko tree, 488–489  
  jellyfish envenomation, 1096  
  ma huang, 547, 549  
  mycotoxins  
    ergot alkaloid, 336–340  
    puffer fish, 250  
    scombrotoxic fish, 258  
    scorpion venom, 916, 919  
    snake venom, 1030–1031  
      antivenom, 1037  
    spider venom, 936, 938–939, 941  
    yew, taxine poisoning, 901  
    yohimbine, 629
- Isoergine, ergot and related  
  compounds, 332–333
- Isoflavonoids, *Wisteria* species, 879–880
- Isoquinoline alkaloids, goldenseal, 505–506
- Isoxazole toxins, Pantherina syndrome  
  and, 298–302
- Itai-itai, historical overview, 5
- Ivy, botanical classification and  
  toxicity, 865
- Jamaican vomiting sickness, 32–35
- Jatropha curcas*, 829–830
- Jellyfish, 1085–1096
- Jequirity bean, 729–731
- Jimsonweed, 777–781
- Jin bu huan, 518–520
- Jinyinhua, structure and toxicity, 863–864
- Juniper oil, 522–524
- Kaffir lily, 710–711
- Karaka nut, botanical description and  
  toxicity, 892–893
- Karakin toxin, exposure and  
  toxicokinetics, 892–893
- Kashin-Beck disease, mycotoxins, 326
- Kava, 525–529
- KcpA protein, *Shigella* toxins, 151
- Keratoconjunctivitis, blister beetle  
  toxins, 974
- Ketones, camphor, 408–409
- Kidney dysfunction. *See Renal*  
  dysfunction
- Kissing bug, 969–971
- Kraits, Asia, 1052–1053
- Laburnum* species, botanical  
  description and toxicity, 889–890
- Lactone glycosides, cleistanthin, 756–757
- Laetrile®  
  clinical response and treatment, 764–765  
  historical overview, 760  
  sources, 761–762  
  mechanism of toxicity, 763–764
- Lancefield Group A, Streptococci  
  toxins, 163
- Lantadene, 867–868
- Lantana  
  botanical description, 867  
  physiochemical properties, 867  
  mechanism of toxicity, 868
- Larrea tridentata*. *See Chaparral*
- Latent period, amatoxins, 276
- Latex compounds, *Jatropha curcas*, 829–830
- Latrodetism, 929–931
- Latrodectus* spiders, 926–931  
  antivenom, 930–931  
  behavior, 928  
  classification and characteristics, 926–927  
  clinical response, 929–930  
  geographic distribution, 927–928  
  supplemental care, 931  
  mechanism of toxicity, 929  
  venom composition and apparatus, 928–929
- Latrotoxins, 929–931
- Lavender, 532–535
- Laxatives. *See Cathartics*
- Lepidoptera. *See Moths and*  
  butterflies
- Lepidopterism, caterpillar venom, 992

- Lepiota* mushrooms  
mycological identification and classification, 268–269  
poisonous parts, 273
- Leptosphaeria sacchari*, onyala, 325
- Leukocidins, *Streptococci* toxins, 163
- Lice, 983–986
- Licorice, 537–541
- Lignans, burdock root, 400–401
- Ligustilide, dong quai, 462–463
- Lima beans, 47
- Limonene. *See* Citrus oil and limonene, 635–643
- Linalool, chemical structure, 533–534
- Linalyl acetate, chemical structure, 533–534
- Linamarin, cassava, 47–48
- Linoleic acids, borage, 397–398
- Linolenic acids, borage, 397–398
- Lionfish, 1117–1120
- Lipidosterolic extract, chemical structure, 587–588
- Lipoteichoic acid (LTA), *Streptococci* toxins, 163
- Listeria monocytogenes* 131–135
- Listeriolysin, *Listeria monocytogenes*, 133–135
- Listeriosis, 133–136
- Liver abscess, *Entamoeba histolytica*, 191–193
- Liver disease, milk thistle for treatment of, 553–557
- Liver toxicity. *See* Hepatotoxicity
- Lizards. *See* Beaded lizard; Gila monster
- “Locked-in” syndrome, puffer fish tetrodotoxin, 245
- Locus of enterocyte effacement (LEE), enterohemorrhagic *E. coli* (EHEC), 122
- Loxosceles* (brown recluse) spiders, 934–940
- Loxosceles arizonica*, 936
  - Loxosceles laeta*, 935–936
  - Loxosceles reclusa*, 935
  - Loxosceles rufescens*, 936
- Lupanine  
physiochemical properties, 785  
toxicokinetics, 786–787
- Lupines and false lupine, 784–787
- Lycorine  
kaffir lily, 710–711  
zephyr lily, 716–717
- Lycosa* (wolf spider), 942
- Lyme disease, classification and pathology, 912
- Lyngbyatoxin A, cyanobacteria, 183, 185–186
- Mace, botanical characteristics, 68–69
- Ma huang, 545–550
- Malathion, lice treatments, 986
- Mammals  
platypus, 1132–1133  
shrews, 1133
- Mandragora officinarum* (mandrake), 779–780
- Margosa oil, 648–651
- Marine invertebrates. *See* specific species
- Massasauga snake, 1040–1041
- Matricin, chamomile, 426–427
- Matsutake mushrooms, Paxillus syndrome, 312–315
- Mayapple, 788–790
- Medical sources, botulinum toxins, 102
- Medicinal uses and. *See also* specific plants and herbs
- African blue lily, 743–744
  - aloe vera, 378–380
  - aristolochic acid, 383
  - azadirachtin, 649–650
  - black cohosh, 389–392
  - borage, 397–398
  - calamus, 404
  - camphor, 408
  - cantharidin, 972–974
  - cascara, 414–415
  - cat's claw, 421–422
  - chamomile, 426
  - chaparral, 430–431
  - chaste tree, 434
  - citronella oil, 633–634
  - citrus oil, 636–637, 639
  - clove, 438
  - colchicine, 694–695
  - Colorado River toad, 997
  - comfrey, 452–453
  - cucurbitacins, 747–748
  - cytisine, 889–890
  - Datura* plants, 778–781
  - digitalis, 773–775
  - echinacea, 569–570
  - ephedra alkaloids, 545–550
  - ergot and related compounds, 335–336
  - eucalyptus oil, 644–646
  - feverfew, 465–466
  - galanthamine/galantamine, 704–705
  - garlic, 471
  - germander, 479
  - ginger, 483
  - ginkgo tree, 489, 491–492
  - ginseng, 498
  - goldenseal, 505
  - hawthorn, 510–511
  - kava, 526–528
  - lavender, 532–533
  - licorice, 538
  - milk thistle, 553–554
  - mistletoe, 792–794
  - neem/margosa oil, 886–887
  - passion flower, 559
  - pennyroyal, 564
  - peppermint oil, 654
  - phytolaccine, 801–802
  - rosemary, 574–575
  - rue, 579–580
  - sassafras, 582–584
  - saw palmetto, 586–587
  - senna, 591–594
  - skullcap, 596–597
  - Solanum* species, 804–805
  - squirting cucumber, 876–877
  - star anise, 607–610
  - tansy, 614–615
  - taxine alkaloids, 900–902
  - tea tree oil, 658–660
  - tung oil, 663–664
  - valerian, 618, 620–621
  - Veratrum* alkaloids, 815–817
  - yarrow, 623–624
  - yohimbe bark/yohimbine, 627–628
- Meliatoxins, botanical descriptions and toxicity, 886–887
- Menthol compounds  
chemical composition, 654–655  
toxicokinetics, 655
- Mescal bean, 733–734
- Methylazoxymethanol (MAM), cycad seeds, 55–56
- Methylergonovine  
medicinal uses, 336  
parenteral toxicity, 338
- N-Methyl-N-formyl hydrazine (MFH), gyromitrin, 286–287
- Methysergide, dose-response data, 336
- Mezerein, 843–844
- Microcystin toxins  
cyanobacteria, 181–188  
in humans, 188  
in water, 187
- Microcystis aeruginosa*, 183, 186
- Milk sickness, white snakeroot toxicity, 827
- Milk thistle  
botanical description, 553  
clinical response, 557  
historical background, 553  
medicinal uses, 553–554  
physiochemical properties, 554–555  
toxicokinetics, 555–556
- Millepora* species, 1093–1094

## INDEX

- Mistletoe, 792–794  
Mites, classification and toxins, 909–911  
Mojave rattlesnake  
  antivenom, 1036–1037  
  characteristics, 1026–1027  
Molds. *See* Mycotoxins  
Monkshood, 736–739  
Monomethylhydrazine (MMH),  
  gyromitrin, 286  
Monosialosyl ganglioside (GM-1),  
  *Vibrio* species, 168  
Monosodium glutamate (MSG),  
  clinical response, 24  
Moray eel, 1112–1113  
Mortality  
  amatoxins, 276  
  ants, wasps, and bees, 961  
  snakebites, global distribution, 1015  
  toxic oil syndrome, 9  
Mosquitoes, 979–981  
Moths and butterflies, 988–993  
M proteins, *Streptococci* toxins, 163  
Multisystem failure  
  ants, wasps, and bees, 961–962  
  colchicine, 696–700  
Muscarine, 305–306  
Muscomol  
  Pantherina syndrome, 298–302  
  mechanism of toxicity, 300  
Musculoskeletal system, mycotoxins, 326  
Mushrooms. *See also* specific mushroom species  
  amatoxins, 265–284  
  *Amanita* species, isoxazole, 298–302  
  ascomycetes, gyromitrin poisoning, 285–289  
  clinical classification, 268  
  gastroenteritis-producing species, 290–293  
  identification of, 265–267  
  muscarine-containing, 303–306  
  orellanine-containing, 307–311  
  Paxillus syndrome, 312–316  
  specimen collection, 266  
  spore identification, 266–268  
  structure, 266  
Mu Tong, 382–384  
Mycetism/mycetismus, clinical classification, 268  
Mycophenolic acid, hematological and immune system damage, 325  
Mycotoxic porcine nephropathy, ochratoxins, 345–346  
Mycotoxins  
  aflatoxins, 327–332  
  basic properties, 318  
  citrinin, 332  
  classification and identification, 317–324  
  ambient air sources, 319–320  
  basic properties, 318  
  colony-forming units, 320–321  
  food sources, 318–319  
  fungal spore concentrations, 321–323  
  genera and species, 320–324  
  occurrence, 318–320  
  water damage and mold growth, 323–324  
  ergot and related compounds, 333–340  
  fumonisin, 341–343  
  fungal genera and species, 320–324  
  historical overview, 317  
  mold-related complaints, 326–327  
  occurrence, 318  
  ochratoxins, 343–347  
  patulin, 347–348  
  rubratoxins, 348  
  target organs, 324–326  
  trichothecenes, 348–358  
  alimentary toxic aleukia, 354–355  
  building-related illness, 357  
  carcinogenesis, 357–358  
  clinical response, 354–358  
  diacetoxyscirpenol, 355  
  food-related illnesses, 354  
  histology and pathology, 354  
  pulmonary hemorrhage, 356–357  
  scabby grain toxicosis, 355  
  stachybotryotoxicosis, 356  
  *Stachybotrys* mycotoxicoses, 355–357  
  zearealenone, 358–359  
Myotoxins, Paxillus syndrome, 313  
Myristicin, toxic characteristics, 68  
Narcissus, 703–705  
Necine compounds, pyrrolizidine alkaloids, 452  
Neem oil 648–650  
Nematocysts, jellyfish venom, 1088–1089  
Neoarctin, burdock root, 400–401  
Neoclerodane diterpenoids, germander, 479–480  
Neocycasin, 45  
Neonatal listeriosis, clinical response, 133–134  
Nephrotoxicity (Renal dysfunction, Kidney dysfunction/failure)  
  aflatoxin, 329–330  
  amatoxins, 271–272  
aristolochic acid, 382–386  
Asian viper venom, 1021  
colchicine, 697  
djenkol beans, 59–60  
epidemic dropsy, 11  
ichthyotoxic acute renal failure, 1125  
mycotoxins, 325  
ochratoxins, 345–347  
orellanine, 307–310  
Paxillus syndrome, 313–315  
pennyroyal, 566–567  
pyrrolizidine alkaloids, 453–455  
rattlesnake venom, 1030  
star fruit, 612–613  
Neuramidase, cholera toxins, 168–169  
Neurodegenerative diseases  
  cyanobacteria, 181  
  cycad seed toxicity, 54  
Neurolathyrism, 62–66  
Neuromuscular complications, toxic oil syndrome, 10  
Neurotoxicity (Neurotoxin)  
  armed (banana) spiders, 931–932  
Australian funnel-web spiders, 932–934  
batrachotoxins, 1002  
blue-ringed octopus, 1081–1082  
botulinum, 105–106  
brevetoxins, shellfish poisoning, 229  
buckthorn, 834–835  
ciguatoxins, 240–241  
cone shell venom, 1079–1080  
coral snake venom, 1049  
cyanobacteria, 181–189  
Elapidae, Australia, 1054–1059  
ergot and related compounds, 337–338  
European viper venom, 1015–1018  
*Latrodectus* spiders, 929–931  
nicotine, 811–812  
osteolathyrism, 806–808  
Pantherina syndrome, psychoactive mushrooms, 298–302  
Paxillus syndrome, 313–315  
pediculicides, 985–986  
puffer fish tetrodotoxins, 248–250  
rattlesnake venom, 1029  
scorpion venom, 916–918  
sea snake venom, 1075  
sea urchins, 1107–1108  
Theridiidae spiders, 930  
Newts. *See* Salamanders and newts  
Nicotine  
  chemical structure and toxicity, 889–890  
  clinical response, 811–812  
  dose response, 811

- toxicokinetics, 810–811  
treatment, 812–813
- Nitrates/nitrites, food additives and sensitivities, 27
- Nit removal, lice treatment, 986
- 3-Nitropropionic acid (3-NPA), cardiac/nervous system damage, 325
- N*-methyl-D-aspartate (NMDA)-receptor agonist cone shell, 1079 cycad seed toxicity, 54 domoic acid toxicity, 215
- Nonhemolytic enterotoxin (Nhe), *Bacillus cereus*, 91–92
- Nordihydroguaiaretic acid (NDGA), chaparral, 429–432
- Noroviruses, 201–203
- Norwegian scabies, chiggers and harvest mites, 910–911
- Nutmeg, 65–67
- Oaks, botanical description and toxicity, 894–895
- Occupational exposure, chili peppers, 74
- Ochratoxins, 343–347
- Octopus. *See* Blue-ringed octopus
- Odollam tree, toxins in, 857
- Okadaic acid, diarrhetic shellfish poisoning, 220–222
- Oleander common oleander, 847–854 yellow oleander, 854–857
- Oleic acids, borage, 398
- Oleoresin compounds capsicum, 72 urushiol compounds, 681–684
- OmpR-envZ, *Shigella* toxins, 151
- Onion and garlic, contact dermatitis from, 684–685
- Onyalai, thrombocytopenic purpura, 325
- Open reading frames (ORFs) astroviruses, 203 caliciviruses, 203
- Ophthalmia nodosa, caterpillar venom, 992
- Orellanine, 308–310
- Orellanus syndrome, nephrotoxicity, 307–310
- Organic anion-transporting polypeptide 1B3 (OATP1B3), amatoxins, 274
- Organosulfur compounds, garlic, 470–471
- Ornithogalum* species, 850
- Oroxylin, chemical structure, 597–598
- OsmZ proteins, *Shigella* toxins, 151
- Osteolathyrism, botanical description and toxicity, 806–808
- Oxalate-containing plants, 768–770
- Oxalic acid, structure and properties, 85–86
- Oxalosis, 84
- 3-N-Oxalyl-L-2,3-diaminopropanoic acid ( $\beta$ -ODAP), neurolathyrism, 63
- Paint materials tung oil, 663–664 turpentine, 666–667
- Palytoxin, soft corals, 1097–1098
- Panaxadiols/panaxatriols, chemical structure, 499–500
- Pancreatitis, scorpion venom toxicity, 918
- Pancytopenia, mycotoxins, 325
- Pantherina syndrome, isoxazole toxins, 298–302
- Paralytic shellfish poisoning, saxitoxins, 231–237
- Paratyphoid, *Salmonella* poisoning, 145
- Parenteral toxicity ergot compounds, 338 ricin/castor beans, 721–722
- Passionflower, 558–562
- Pasteurella multocida*, aflatoxin and, 330
- Patulin toxins, 347–348
- Paxillus syndrome clinical response, 314–315 diagnostic testing and treatment, 315 mushroom identification, 312–313 principal toxins, 313–314
- PCDDs, yusho/yu-cheng, 6, 8
- PEB1 cell surface protein, *Campylobacter jejuni*, 97
- Pederin, physiochemical properties, 973–974
- Pediculicide, lice treatments, 985–986
- Penicillin G, amatoxin therapy, 279
- Penicillium* in air, 320 citrinin, 332 classification and identification, 320–324 food sources, 318–319 mycophenolic acid, 325 ochratoxins, 343–347 patulin, 347–348 rubratoxins, 348
- Pennyroyal, 563–567
- 2,3,4,7,8-Pentachlorodibenzofuran (PnCDF), yusho/yu-cheng diagnosis, 8
- Pepper, 69–73
- Peppermint oil, 653–655
- Pepper tree, botanical description and toxicity, 897–898
- Peptides, rattlesnake venom, 1028–1029
- Peripheral neuropathy, toxic oil syndrome, 10
- Permethrin, lice treatments, 986
- Peruvoside, physiochemical properties, 854–855
- Peucetia viridans* (green lynx spider), 942
- P-glycoprotein, hawthorn toxins, 512–513
- Phallotoxins, Amanita mushrooms, 268–271
- Phenethylamine derivatives, ephedra alkaloids, 547–550
- Phenolic compounds black cohosh, 389–392 oaks, 894–895 solanine toxicity, 79
- Phenylketonuria (PKU), food additives and sensitivities, 24–30
- Phidippus* (black jumping spiders), 942–943
- Phoneutria* spiders, 931–932
- Phospholipases *Bacillus cereus*, 91, 115–116 beaded lizard, 1009 bee venom, 957–958, 965 catfish, 1122 *Clostridium perfringens*, 114–116 Gila monster, 1009 *Listeria monocytogenes*, 134–136 pepper tree, 897 scorpion venom, 916 sea snakes, 1075 snake venom, 1015, 1020, 1028–1030, 1043, 1053–1055, 1060 spider venom, 936–937 starfish, 1105 wasps and hornets, 958
- Physostigmine, belladonna alkaloid toxicity and, 781
- Phytolaccine, 800–802
- Phytophotodermatitis, 685–687
- Picobirnavirus HIV infection and, 206 taxonomy and classification, 203
- Pine oil, 666–669
- Pine thistle, 514–516

## INDEX

- Piperine, toxin structure and properties, 72
- Pit vipers. *See also* Viperidae (vipers)  
Asia, 1044–1046  
Central and South America, 1043–1044  
classification and characteristics, 1021–1025  
copperhead species, 1041–1042  
cottonmouth, 1042–1043  
North America, 1021–1043  
pygmy rattlesnake and massasauga, 1040–1041  
scientific and common names, 1021–1024  
true rattlesnake, 1025–1040  
behavior and senses, 1027–1028  
clinical response, 1030–1032  
diagnostic testing, 1032–1033  
geographic distribution, 1026  
species differences, 1026–1027  
treatment, 1033–1040  
venom composition and apparatus, 1028–1029
- Platypus, 1132–1133
- Podophyllotoxins  
clinical response, 790–791  
toxicokinetics, 789–790
- Poison hemlock, 796–798
- Poison ivy, poison oak, poison sumac, toxicodendron dermatitis, 679–684
- Pokeweed, 800–802
- Polyacetylene, ivy and falcarinol, 865
- Polychlorinated biphenyls (PCBs)  
biomarkers, 7–8  
dose response, 6–7  
food processing, 6  
yusho epidemiology, 6
- Polychlorinated dibenzofurans (PCDFs)  
biomarkers, 7–8  
dose response, 6–7  
food processing, 6  
yu-cheng epidemiology, 6
- Polychlorinated quaterphenyls (PCQs), yusho/yu-cheng, 6–7
- Polymers, aloe vera, 378
- Polypeptides, rattlesnake venom, 1028–1029
- Polyphenolic compounds  
red baneberry, 745–746  
rosemary, 575–576
- Polysialogangliosides (GD1b/GT1b), botulinum toxins, 106
- Porcupine fish, 1124–1125
- Portuguese man-of-war  
classification and characteristics, 1094–1095  
clinical response and treatment, 1096  
geographic distribution and behavior, 1095  
venom composition and apparatus, 1095
- Potassium channels, scorpion venom and, 916–918
- Potatoes, 75–80
- Pregnancy  
amatoxin toxicokinetics in, 275–276  
camphor toxicokinetics, 410  
ciguatoxin sequelae in, 243  
hymenoptera-related anaphylaxis, 962  
podophyllotoxins and, 790  
St. John's wort and, 604
- Preservatives, clinical response to, 26–27
- Prevention, hymenoptera sensitivity reactions, 964–965
- Prickly pear cactus, as food source, 838
- Procyanidins, hawthorn, 511–513
- Propionic acid, food additives and sensitivities, 27
- Prorocentrum* species, diarrhetic shellfish poisoning, 213, 222–223
- Protein phosphatases, cantharidin inhibition, 973–974
- Protein synthesis, amatoxin mechanisms and, 274
- Protoanemonin, 690–692
- Protoperidinium crassipes*, azaspiracid poisoning, 218–220
- Protozoa  
*Cryptosporidium parvum*, 193–195  
*Cyclospora cayetanensis*, 195–197  
*Entamoeba histolytica* and amebiasis, 191–193  
*Giardia lamblia*, 197–198
- Psilocybe* mushrooms, 308
- Psychoactive mushrooms, *Pantherina* syndrome, 298–302
- Pubic lice. *See* Lice
- Puffer fish and tetrodotoxin, 247–249
- Pulegone  
chemical structure, 564  
diagnosis and treatment, 566–567  
mechanism of toxicity, 565–566
- Pulmonary edema  
clove toxicity, 439  
toxic oil syndrome, 10
- Pulmonary hemorrhage, trichothecene mycotoxins, 356–357
- Pulque, century plant, 751–752
- Purple cornflower, 568–572
- Pygmy rattlesnake, 1040–1041
- Pyrethrins, lice treatments, 986
- Pyrrolizidine alkaloids  
borage oil, 398,  
chaparral, 431  
chemical structure, 451–452  
coltsfoot, 446–447  
comfrey, 449–455  
*Echinacea* species, 571  
hepatitis, 431, 479  
hepatotoxicity, 479  
plants, containing, 449–455  
tansy ragwort, 614
- Quinovic acid glycosides, cat's claw, 422–424
- Rabbitfish, 1124
- Ranunculin, physiochemical properties and toxicity, 691–692
- Rapeseed oil, eosinophilia-myalgia syndrome, 14
- Ratfish, classification and toxicity, 1130
- Rattlesnake (true rattlesnake), 1025–1040. *See also* Pygmy rattlesnake  
behavior and senses, 1027–1028  
characteristics, 1026–1027  
clinical response, 1030–1032  
diagnostic testing, 1032–1033  
geographic distribution, 1026  
species differences, 1026–1027  
treatment, 1033–1040  
venom composition and apparatus, 1028–1029
- Reactive arthritis, *Salmonella* poisoning, 144
- Red baneberry, chemical composition and toxicity, 745–746
- Red tides, saxitoxins, paralytic shellfish poisoning, 231–236
- Red whelk, tetramine, 253–255
- Refractory hypotension, hymenoptera sensitivity reactions, 963
- Regulatory guidelines  
aloe vera, 378  
aristolochic acid, 383  
borage, 398  
calamus, 404  
cascara, 415  
chamomile, 426  
chaparral, 430

- chaste tree, 434  
 cinnamon, 40  
 citronella oil, 633  
 citrus oil, 637  
 clove, 438  
 cranberries, 459  
 dong quai, 462  
*echinacea*, 570  
*ephedra* alkaloids, 546  
 feverfew, 466  
 garlic, 471  
 ginger, 483  
 ginkgo tree, 489  
*ginseng*, 498–499  
*goldenseal*, 505  
 hawthorn, 511  
*hypericum* extract, 601  
 juniper oil, 523  
 kava, 526  
 lavender, 533  
 medicinal uses, 659  
 passion flower, 559  
 passionflower extract, 559  
 peppermint oil, 654  
 rue, 580  
 saw palmetto, 586–587  
 senna, 592–594  
 silymarin, 554  
 star anise, 608  
*teucrin A*, 478  
 valerian, 618  
 yarrow, 624  
 yohimbe bark/yohimbine, 628  
 Reiter's syndrome, *Salmonella* poisoning, 142  
 Respiratory dysfunction. *See also* Adult respiratory distress syndrome (ARDS); Pulmonary edema; Pulmonary hemorrhage  
 blue-ringed octopus venom, 1081–1082  
 brevetoxins, 229  
 clove toxicity, 439  
*echinacea*, 570  
 jellyfish venom, 1089–1093  
 mycotoxins, 326  
 peppermint oil toxicity, 655–656  
 rattlesnake venom, 1030–1031  
 scorpion venom toxicity, 919–921  
 turpentine toxicity, 669  
 Reye's syndrome  
 aflatoxin exposure and, 330–331  
 neem oil toxicity, 649–651  
 pyrrolizidine alkaloids, 454  
 Rhabdomyolysis  
 amatoxin-containing mushrooms, 269
- Bacillus cereus*, 92  
 bees, wasps, and ants, 959, 961–962, 964  
 belladonna alkaloids, 781  
 centipedes, 952  
 colchicine-containing plants, 696, 698  
 gyromitrin-containing mushrooms, 287  
 licorice, 541  
*Paxillus* and other mushroom syndromes, 314–315  
 poison hemlock, 798  
 ricin, 723–724  
 sea snakes, 1075–1076  
 scorpions, 920  
 soft coral, palytoxin poisoning, 1098  
 spiders, 933  
 terrestrial snakes, 1017, 1021, 1033, 1038–1039, 1041, 1044, 1046, 1050, 1054, 1056–1057  
 water hemlock and water dropwort, 823  
*Rhamnus* species, cascara and, 414  
*Rhinitis*, tansy exposure, 615–616  
*Rhododendrons*, 870–872  
*Rhubarb*, 82–85  
*Ribosome-inactivating protein (RIP)*, camphor, 408  
 Rice oil disease. *See* Yusho (rice oil disease)  
*Ricin*. *See* Castor bean and ricin, 718–726  
*Robinetin*, structure and toxicity, 881–882  
*Rosemary*, 574–576  
*Rotaviruses*, 202–207  
*Rubratoxins*, 348  
*Rue*, 579–581  
*Russell's viper*, venom composition and apparatus, 1020–1021  
 Saccharin, clinical response, 25  
*Safrole*  
 chemical structure, 583  
 food additives and sensitivities, 29  
 mechanism of toxicity, 583–584  
 Seizures (convulsions)  
*Aconitum* species, aconite poisoning, 739  
 akee fruit, Jamaican vomiting sickness, 36  
 angel's trumpet flower/tea ingestion, 779  
 bee envenomation, 961  
 borage oil ingestion, 398  
 botulism, 107
- camphor poisoning, 407, 409–411  
 Carolina jessamine ingestion, 841  
 chinaberry fruit, 886  
 ciguatera fish poisoning, 242  
 clove oil ingestion, 439  
 colchicine-containing plant ingestion, 697  
 contaminated mussels, 216  
 coral snake envenomation, 1049  
 cyanogenic foods, 51  
 plants, 765  
*ephedra* alkaloids, 548–549  
*ma huang*, 548  
*ergot* alkaloids, 338–339  
*Escherichia coli* infection, 124  
 eucalyptus oil ingestion, 646  
 fire ant stings, 962  
 food additives  
 aspartame, 24  
 fungus, 317  
 germander, 478  
 gingko seed consumption, 491–494  
 golden chain tree seeds, 889  
*goldenseal*, 507  
 horse chestnut ingestion, 884  
*jejunior* bean ingestion, 731  
 Jerusalem cherry ingestion, 804  
 jimsonweed intoxication, 780–781  
 karaka nut ingestion, 892–893  
 lice infestation treatment, 985  
*Listeria monocytogenes* infection, 135  
*Laetrile*®, 763  
 man-of-war sting, 1096  
 mushroom poisoning, 269–270, 286–288, 331–332  
 mayapple ingestion, 790  
 neem oil ingestion, 649–651  
 nicotine ingestion, 811–813  
 oxalate-containing plants, 86  
 pennyroyal, 563–566  
 pine thistle ingestion, 516  
 poison hemlock, 798  
 pokeweed leaf tea, 801  
 puffer-fish poisoning, 250  
*Rhododendron* species, mad honey ingestion, 871  
 St. John's wort, 603–604  
*Salmonella* infection, 145  
 scabies infestation treatment, 911  
 scorpion envenomation, 918–919, 921  
 Shigella infections, 152

- Seizures (convulsions) (*cont'd*)  
 shrew venom, 1133  
 snake envenomation, 1031, 1056  
 solanine poisoning, 80  
 spider envenomation, 929, 939  
 star anise tea, 608–610  
 star fruit ingestion, 612  
 stingray envenomation, 1129  
 stonefish envenomation, 1119  
 tansy oil ingestion, 616  
 toad poisoning, 999  
 treatment  
   colocynth, 443  
   valerian, 618  
 turpentine ingestion, 668–670  
*Veratrum* intoxication, 817  
*Vibrio cholerae* infection, 169  
 water hemlock/dropwort ingestion, 823–824  
 white snakeroot, milk sickness, 827  
 yew seed ingestion, 899
- Shock**  
 aconite poisoning, 739  
 anaphylactic  
   bee stings, 960–961  
   burdock, 401  
   snake envenomation  
     epinephrine, 1037  
     vasopressors, 963  
   yew needles, 901  
 bee stings, 959  
   epinephrine, 963  
 camphor poisoning, 411  
 cardiogenic  
   colchicine-containing plants, 697–699  
   oleander poisoning, 850, 852, 856  
   scombroid fish poisoning, 258  
   scorpion envenomation, 919–921  
     yew leave ingestion, 901  
 ciguatera fish poisoning, 242  
*Coprinus atramentarius* mushroom  
   ingestion, 296  
 electric  
   ciguatera fish poisoning, 243  
   snake envenomation, 1033  
   spider envenomation, 940  
 horse chestnut, 884  
 hypovolemic  
   castor beans, 721  
*Laetile®*, 763  
 mistletoe tea, 794  
 mushroom syndromes, 314  
 pennyroyal oil, 565  
 puffer fish poisoning, 250  
   burdock, 401  
 scorpion envenomation, 918
- septic  
   ricin, 722  
 snake envenomation, 1016–1017,  
   1034, 1056  
 star fruit, 612  
 toxic shock syndrome  
   foodborne infections, 164  
   *Staphylococcus aureus*, 156, 158  
*Vibrio* species, 169  
 St. Anthony's Fire, ergot and related  
   compounds, 332–333  
 St. John's wort, 600–604  
 Salamanders and newts  
   geographic distribution, 1003  
   identifying characteristics,  
     1002–1003  
   venom composition and apparatus,  
     1003–1005  
*Salmonella*, 141–149  
   garlic, 474  
   Moray eel consumption, 1113  
 Salt, *Clostridium perfringens*  
   inhibition, 115  
 Sambunigrin, physiochemical  
   properties, 762  
 Sanguinarine, epidemic dropsy, 11–13  
 Saponins  
   buckeye, 883–884  
   *Wisteria* species, 879–880  
 Sapovirus, taxonomy and  
   classification, 203  
 Sassafras, 582–584  
 Satratoxin, trichothecene toxins,  
   349–353  
 Saw palmetto, 586–589  
 Saxitoxin/neosaxitoxin  
   blue-ringed octopus, 1081–1082  
   cyanobacteria, 186  
   paralytic shellfish poisoning,  
     229–233  
 Scabies, chiggers and harvest mites,  
   910–911  
 Scabby grain toxicosis, trichothecene  
   mycotoxins, 355  
 Scalded skin syndrome,  
   *Staphylococcus aureus*, 156  
*Schefflera* species, calcium oxalates in,  
   769–771  
 Scillaren A, chemical structure and  
   toxicity, 857–858  
 Scombrotoxin, 254–257  
 Scopolamine  
   chemical structure, 778  
   toxicokinetics, 779–781  
 Scorpionfish, 1116–1120  
 Scorpions, 914–924  
 Sea anemones, classification and  
   characteristics, 1096–1097
- Sea cucumbers, identifying  
   characteristics and toxins,  
   1109  
 Sea snakes, 1074–1076  
 Sea urchins, 1106–1108  
 Sedatives, skullcap, 596–598  
 Senkirkine, coltsfoot, 446–447  
 Senna, 591–594  
 Sennosides, chemical structure,  
   592–594  
 Sensory nerve action potentials  
   (SNAPs), puffer fish  
   tetrodotoxins, 250  
 Sepsis, colchicine, 694–700  
 Serotype B-E *Clostridial perfringens*, 115  
 Serum sickness  
   bees, wasps, and ants, 959, 961  
   *Latrodectus*, 931  
   scorpions, 921  
   terrestrial snakes, 935, 1036, 1038,  
     1040, 1050  
 Sesquiterpene compounds  
   citronella oil, 633  
   coltsfoot, 446–447  
   mushrooms, 290  
   tansy, 615–616  
   valerian, 618–619  
 Sexual stimulants  
   cantharidin, 972–974  
   toad venom, 997–999  
 Shake lotions, *Toxicodendron*  
   dermatitis, 683  
 Sheng Ma, 389  
*Shigella* species (Shiga enterotoxins), 150–155  
 enteroinvasive E. coli (EIEC) and,  
   120–121  
 Shogaol compounds  
   chemical composition, 483–484  
   toxicity, 485–486  
 Shrews, 1133  
*Sicarius* species (six-eyed crab  
   spiders), 943  
 Silibinin  
   amatoxin therapy, 279  
   toxicokinetics, 555–556  
 Silicristin, chemical structure,  
   554–555  
 Silymarin complex  
   amatoxin therapy, 279  
   chemical structure, 554–555  
   milk thistle, 553–557  
 Skeletal deformities, neurolathyrism,  
   63  
 Skin and. *See also* Dermatitis  
   African blue lily, 743–744  
   blister beetle toxins, 974

- caterpillar venom, 991–993  
 catfish toxins, 1122–1123  
 chaparral toxicity, 431–432  
 chiggers and harvest mites, 909–911  
 chili peppers, 73–74  
 fire corals, 1094  
 flea bites, 977–978  
 Gila monster/beaded lizard venom, 1010  
 hard corals, 1097  
 hymenoptera sensitivity reactions, 961–965  
*Latrodectus* spider toxins, 929–931  
*Loxosceles* spider venom, 936–940  
 plant dermatitis, 677–687  
 podophyllotoxins, 790–791  
 rattlesnake venom, 1029–1031  
 sponge toxins, 1103  
 starfish toxins, 1106  
 trichothecene mycotoxins, 325–326  
 turpentine toxicity, 669  
**Skullcap**, 596–598  
**Snakes.** *See also* specific species  
 classification, 1013  
 sea snakes, 1074–1076  
 terrestrial  
   Atractaspididae, 1013–1014  
   Colubridae, 1059–1062  
   Crotalinae, 1021–1046  
   Elapidae, 1046–1059  
   Viperidae, 1014–1021  
**Snowberry**, botanical description and toxicity, 874–875  
**Sodium channels**  
 armed (banana) spider toxins, 931–932  
 batrachotoxin mechanisms, 1002  
 ciguatoxin mechanisms in, 240  
 puffer fish tetrodotoxins, 248–249  
 saxitoxin-induced paralytic shellfish poisoning, 234  
 scorpion venom and, 916–918  
*Urginea sanguinea* toxicity, 857–858  
**Sodium cyclamate**, clinical response, 25  
**Soft coral**, classification and characteristics, 1097–1098  
**Soft tissue infection.** *See also* Tissue damage  
 rattlesnake venom, 1029–1030  
*Salmonella* poisoning, 145  
**Solanine toxicity**, 75–80  
**Solanum** species, botanical description and toxicity, 803–805  
**Soluble N-ethylmaleimide-sensitive factor attachment protein receptor (SNARE) complex**, botulinum toxins, 106  
**Somatic antigens**, *Listeria monocytogenes*, 134  
**Sorghum**, toxic parts of, 47  
**Sparteine**  
   physiochemical properties, 785  
   toxicokinetics, 786–787  
**Sphingomyelinase D**, *Loxosceles* spider venom, 936–937  
**Spiders**  
   *Argiope* species, 941  
   armed (banana) spider, 931–932  
   Australian funnel-web spiders, 932–934  
   *Cheiracanthium* species, 941–942  
   *Latrodectus* species, 926–931  
   *Loxosceles* (brown recluse), 934–940  
   *Lycosa* (wolf spider), 942  
   necrotizing arachnidism, 941  
   overview, 925  
   *Peucetia viridans* (green lynx), 942  
   *Phidippus* (black jumping spiders), 942–943  
   *Sicarius* (species), 943  
   *Tegenaria agrestis* (hobo spider), 943  
   *Theridiidae* species, 930  
**Sponges**, 1102–1103  
**Spore concentrations**, mycotoxin measurements, 322–324  
**Sporidesmin**, liver toxicity, 325  
**Squirting cucumber**, botanical description and toxicity, 876–877  
**Stabilizers**, food additives and sensitivities, 28  
**Stachybotryotoxicosis**, historical overview, 349  
**Stachybotrys fungi**  
   respiratory tract, 326, 356–357  
**Stachybotrys mycotoxicoses**, 355–356  
**Stachybotryotoxicosis**  
   clinical effects, 356  
   hematological and immune system, 325  
*Staphylococcus aureus*, 154–157  
**Star anise**, 607–610  
**Starfish**, 1105–1106  
**Star fruit**, 611–613  
**Sterigmatocystin**, aflatoxins, 327  
**Steroids**  
   rattlesnake venom, 1040  
   toxicodendron dermatitis, 683  
**Stingray**, classification and toxicity, 1128–1130  
**Stonefish**, 1115–1120  
   *Streptococcus*, 160–163  
**Streptolysins**, *Streptococci* toxins, 163  
**Sugarcane poisoning**, cardiac/nervous system damage, 325  
**Sulfites**, food additives and sensitivities, 26–27  
**Superantigens**, *Staphylococcus aureus*, 158  
**Sweet peas**, botanical description and toxicity, 806–808  
**Sweet potatoes.** *See* Solanine toxicity  
**Synaptosomal-associated protein (SNAP-25)**, botulinum toxins, 106  
**Synaptotagmins I and II**, botulinum toxins, 106  
**Syneprine**, chemical structure, 637–639  
**Syntaxin**, botulinum toxins, 106  
**Tannins**  
   oaks, 894–895  
   yellow bird-of-paradise, 749–750  
**Tansy**, 614–616  
**Tarantula**  
   ophthalmia nodosa, 992  
**Taste enhancers**, 24–25  
**Taxifolin**, chemical structure, 554–555  
**Taxine alkaloids**  
   chemical structure, 900–901  
   clinical response, 901–902  
   toxicity, 901–902  
**Tazettine**, chemical structure and toxicity, 716–717  
**Tea tree oil**, 658–660  
*Tegenaria agrestis* (hobo spider), 943  
**Terpene trilactone compounds**, ginkgo tree, 489–491  
**Terpenoid compounds**  
   calamus, 404  
   mushrooms, 290  
   turpentine, 666–670  
   yellow bird-of-paradise, 749–750  
**Terpinen-4-ol**  
   lavender, 533  
   tea tree oil, 659–660  
**Tetrahydropalmatine**, 518–520  
**Tetramine.** *See* Red whelk and tetramine, 253–255  
**Tetrodotoxin.** *See* Puffer fish  
   poisoning and tetrodotoxin, 247–252  
   blue-ringed octopus, 1081–1082  
   poison frogs, 1001–1002  
   salamanders and newts, 1004–1005  
**Teucrin A**  
   chemical structure, 478–479  
   toxicity mechanisms, 478–479  
*Theridiidae* spiders, 930

# INDEX

- Thermostable direct hemolysin, *Vibrio* toxins, 169
- Thevetia* cardenolides physiochemical properties, 854–855 mechanism of toxicity, 855–856
- Thrombocytopenia, rattlesnake venom, 1030
- Thrombocytopenic purpura, onyalai, 325
- Thromboembolism, toxic oil syndrome, 10
- Thrombotic thrombocytopenic purpura (TTP) abnormalities, 124–125 enterohemorrhagic *E. coli* (EHEC), 124 treatment, 127–128
- Thujone, chemistry and toxicity, 615–616
- Tick paralysis, 912
- Ticks, classification and toxins, 911–912
- Toadfish, 1124
- Toads, Colorado River toad, 996–1000
- Tomatidine, solanine toxicity, 79
- Tomatoes, 77–83
- Torovirus animal sources for, 204 taxonomy and classification, 202
- Toxicodendron dermatitis poison ivy, oak, and sumac, 679–684 trees as source of, 685
- Toxic oil syndrome, 6–9
- Toxic shock syndrome toxin (TSST-1), *Staphylococcus aureus*, 156–158
- Toxi-Epi study, toxic oil syndrome, 9
- Transplantation, amatoxin therapy, 275
- Tree tobacco, 809–813
- Tremetone, 826–827
- Trichoderma* species, mycotoxins, 319
- Tricholoma* mushroom, Paxillus syndrome, 312–315
- Trichotheccenes, 348–358 alimentary toxic aleukia, 354–355 building-related illness, 357 carcinogenesis, 357–358 clinical response, 354–358 diacetoxyscirpenol, 355 diagnosis and treatment, 358 dose response, 353 exposure sources, 351–353 food-related illnesses, 354 histology and pathology, 354 historical overview, 348–349 pulmonary hemorrhage, 356–357 scabby grain toxicosis, 355
- stachybotryotoxicosis, 356 *Stachybotrys* mycotoxicoses, 355–357 structure and physiochemical properties, 349–351 toxicokinetics, 353–354
- Trimethoxyamphetamine (TMA), calamus, 405
- Triterpenes black cohosh, 389–392 blue cohosh, 395 cat's claw, 422–424 pepper tree, 897–898
- Trombiculidae, classification and toxins, 909–911
- Tropane alkaloids, *Hyoscyamus niger*, 779
- Trophozoites amebiasis, 191–192 *Giardia lamblia*, 197–198
- Tropical ataxic polyneuropathy, cyanogenic glycosides, 47–48
- L-tryptophan, eosinophilia-myalgia syndrome, 14–16
- Tulip bulbs, contact dermatitis from, 684
- Tung oil, 663–664
- Turkey X disease, aflatoxins, 327
- Turpentine, 666–670
- Tussilagine, coltsfoot, 447
- Type A *Clostridia* enterotoxin, 115
- Type-III secretion system (TTSS), enterohemorrhagic *E. coli* (EHEC), 122
- Typhoid, *Salmonella* poisoning, 145
- Uncaria tomentosa*. See Cat's claw
- Upper respiratory tract infections (URI), echinacea, 570
- Urginea sanguinea*, 857–858
- Urinary tract abnormalities cranberries, 458–460 djenkol bean poisoning, 60 saw palmetto, 586–588
- Urushiol decontamination and treatment, 683 ginkgo tree, 493 toxicodendron dermatitis, 679–684
- Valencene, chemical structure, 637–639
- Valerenic acids, 618–619
- Valerian, 617–620
- V-antigen, *Yersinia enterocolitica*, 176
- Venom composition and apparatus bees, 957–958 bugs, 971
- caterpillars, 991
- catfish, 1122
- centipedes, 951–952
- cobras and kraits, 1052–1053
- Colombian poison-dart frog, 1001
- cone shells, 1079–1080
- copperhead snakes, 1042
- Elapidae, Australia, 1054–1059
- fire ants, 958
- Gila monster and beaded lizard, 1009–1010
- jellyfish, 1088–1089
- Latrodectus* spiders, 928
- lionfish, scorpionfish, and stonefish, 1117–1118
- Loxosceles* spiders, 936–937
- mosquitoes and flies, 980
- pit vipers Asia, 1045–1046 Central and South America, 1043–1044
- Portuguese man-of-war, 1095 pygmy and massasauga rattlesnakes, 1041
- rattlesnakes, 1028–1029 grading system for, 1032
- salamanders and newts, 1003–1005
- scorpions, 916
- sea snakes, 1075
- sea urchins, 1107–1108
- stingray, 1129–1130
- toads, 997–998
- vipers Asian vipers, 1020–1021 European, 1015–1018 Middle and Near East/African vipers, 1018–1020
- wasps and hornets, 958
- weever fish, 1120–1121
- winged hymenoptera, 958–959
- Veno-occlusive disease, pyrrolizidine alkaloids, 453–455
- Veranisatin A, chemical structure, 608–609
- Veratridine, physiochemical properties and toxicity, 816–817
- Veratrum* alkaloids, 707–709, 815–817
- Vesicle-associated membrane protein complexes (VAMP/synaptobrevin II), botulinum toxins, 105–106
- Vespids (wasps), 956–965
- Vibrio* species, 167–169
- Vicianin, physiochemical properties, 762
- Viperidae (vipers). See also Pit vipers Asia, 1020–1021

- classification and characteristics, 1014  
 European, 1014–1018  
 geographic distribution, 1014–1015  
 Middle and Near East/Africa, 1018–1020  
 venom composition and apparatus  
   Asian vipers, 1020–1021  
   European, 1015–1018  
   Middle and Near East/African vipers, 1018–1020  
 Virotoxins, *Amanita* mushrooms, 272–273  
 Viscerocutaneous loxoscelism, 938–939  
 Viscotoxins, mistletoe, 793–794  
 Vitamin K, pyrrolizidine alkaloid toxicity, 455  
 Wandering jew, botanical description and principal toxins, 819–820  
 Wasps (vespids), 956–965  
 Water contamination  
   cyanobacteria, 181–188  
   noroviruses, 203–204  
   *Vibrio* species, 167–170  
 Water-damaged building, mold growth and, 323–324  
 Water dropwort and water hemlock, 821–824  
 Water moccasins, 1042–1043  
 Weever fish, 1120–1121  
 Western Diamondback rattlesnake, characteristics, 1026–1027  
 Western Pacific amyotrophic lateral sclerosis/Parkinsonism-dementia complex  
   cyanogenic glycosides, 54  
   cycad seed toxicity, 54–58  
 Wheel bug, 969–971  
 White snakeroot, 826–827  
 Widow spiders. *See Latrodectus* spiders  
 Wieland-Meixner test, amatoxin analysis, 277  
*Wisteria* species, botanical description and toxicity, 879–880  
 Wogonin, chemical structure, 597–598  
 Wolf spider. *See Lycosa* (wolf spider)  
 Yarrow, 623–625  
 Yellow bird-of-paradise, botanical description and principal toxins, 749–750  
*Yersinia enterocolitica*, 172–176  
 Yew, 899–901  
 Yohimbe bark/yohimbine 627–630  
 Yop effectors, *Yersinia enterocolitica*, 174  
*ystA* gene, *Yersinia enterocolitica*, 174  
 Yst enterotoxin, *Yersinia enterocolitica*, 176  
 Yu-cheng, 3–6  
 Yusho (rice oil disease), 3–6  
 Zearalenone  
   reproductive system, 326  
   structure and effects of, 358–359  
 Zephyr lily, 716–717  
 Zoanthids, palytoxin, 1097–1098  
 Zoonoses, *Giardia lamblia*, 197–198