

Prescription Medicines from Natural Sources

Cancer Medications

Drug or chemical compound	Source	Use	Country of origin	References	
Vincristine and Vinblastine	Madagascar or Rosy Periwinkle (<i>Catharanthus roseus</i>)	Childhood leukemia, Hodgkin's disease	Madagascar	Chivian and Bernstein, 2008	
Topotecan, and Irinotecan or Camptosar (CPT-11)	<i>Camptotheca</i> tree of Central China	Various cancers	Central China	Chivian and Bernstein, 2008	
Taxol and other taxanes	Pacific Yew tree <i>Taxus brevifolia</i>	Breast cancer, other cancers	U.S. Pacific Northwest	Chivian and Bernstein, 2008	
Other cancer medications¹ H-101 2005 aldesleukin alemtuzumab bevacizumab celmoleukin cetuximab denileukin diftitox interferon alfa2a interferon alfa2b interferon, gamma-1a interleukin-2 mobenakin pegaspargase rituximab cladribine cytarabine ocfosfate dexamethasone docetaxel dromostanolone	elliptinium acetate epirubicin HCl estramustine ethinyl estradiol tasonermin teceleukin tositumomab trastuzumab aclarubicin actinomycin D angiotensin II arglabin asparaginase bleomycin carzinophilin chromomycin A3 daunomycin doxorubicin leucovorin masoprocol mithramycin mitomycin C neocarzinostatin	paclitaxel palictaxel nanoparticles pentostatin streptozocin testosterone alitretinoin amrubicin HCl belotecan hydrochloride calusterone fluorouracil ftorafur gemcitabine HCl mercaptapurine methotrexate mitoxantrone HCl nelarabine thioguanine uracil mustard abarelix bexarotene pemetrexed fluoxymesterone	leuprolide medroxyprogesterone acetate megesterol acetate methylprednisolone methyltestosterone miltefosine mitobronitol nadrolone phenylpropionate norethindrone acetate pirarubicin prednisolone prednisone teniposide carmofur clofarabine cytosine arabinoside decitabine exemestane	formestane fosfestrol fulvestrant gemtuzumab ozogamicin goserelin acetate hexyl aminolevulinate histrelin hydroxyprogesterone idarubicin hydrochloride irinotecan hydrochloride testolactone topotecan HCl doxifluridine enocitabine floxuridine fludarabine phosphate peplomycin sarkomycin solamargine (aka BEC) etoposide	triamcinolone triptorelin valrubicin vapreotide acetate vindesine vinorelbine zinostatin stimalamer aminoglutethimide azacytidine capecitabine raltitrexed tamibarotene temozolomide

Heart Disease and Hypertension Medications

Drug or chemical compound	Source	Use	Country of origin	References
Captopril or Capoten	Brazilian pit viper venom	Hypertension and congestive heart failure	Brazil	Chin et al., 2006
Lisinopril	Brazilian pit viper venom	Hypertension and heart disease	Brazil	Patlak, 2003

¹ Cragg and Newman 2007

Protoveratrine	False hellebore, <i>veratum album</i>	Hypertension	Europe, Asia, North America	
Diabetes Medications				
Drug or chemical compound	Source	Use	Country of origin	References
Exenatide (Byetta)	Originally derived from the saliva of the Gila monster, a venomous lizard from Mexico and the southwestern US.	Diabetes	Southern Arizona, southeastern corner of California, southern tip of Nevada, and southwestern corners of Utah and New Mexico, and Mexico.	Chin et al., 2006
Cholesterol Medications				
Drug or chemical compound	Source	Use	Country of origin	References
Lipitor or Atorvastatin	Synthesized from earlier compounds found in soil microbes	cholesterol		Endo, 2004 David Newman, <i>pers. communication</i>
Mevinolin or Lovastatin	Soil microbe/fungus	cholesterol		Endo, 2004
HIV and Anti-viral Medications				
Drug or chemical compound	Source	Use	Country of origin	References
Azidothymidine or AZT	sponge <i>Cryptotethya crypta</i>	AZT was the first antiretroviral medication approved for the treatment of HIV/AIDS -continues to be used as therapy and mother/child transmission prevention	Marine (worldwide)	Chivian and Bernstein, 2008
Pain Medications				
Drug or chemical compound	Source	Use	Country of origin	References
Ziconotide	Cone snails, <i>Conus magus</i>	Painkillers - a powerful analgesic used for patients in severe chronic pain.	Pacific Ocean coral reefs from Indonesia Marshall Islands, Fiji. Also in the Indian Ocean near Madagascar.	Chin et al., 2006
Anti-malarial medications				
Drug or chemical compound	Source	Use	Country of origin	References
Quinine	bark of cinchona trees <i>Cinchona officialinis</i>	used to synthesize the antimalarial drugs chloroquine and mefloquine -structure continues to be modified to produce more effective antimalarials such as bulaquine	Amazon region, South America	Chivian and Bernstein, 2008
Artemisinin	sweet wormwood plant (<i>Artemisia annua</i>)	-antimalarial Artemisinin -further derivatives have been identified, including artemether, artether, artemotil -in combination with other antimalarials,	China	Chivian and Bernstein, 2008

		eg. mefloquine, are highly effective medicines, particularly for treating the most deadly form caused by <i>Plasmodium falciparum</i> , which has become increasingly resistant to chloroquine and sulfadoxine-pyrimethamine -possible cancer treatment		
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New Cancer Medications in Development

Drug or chemical compound	Source	Use	Country of origin	References
Andrographolide	(<i>Andrographis paniculata</i>)	Andrographolide is being tested for use against HIV, cancers and severe liver damage	India and Sri Lanka	http://www.ncbi.nlm.nih.gov/pubmed/10925397
Dolastatins	sea hare, an Indian ocean marine species	cancer	Indian Ocean	Cragg and Newman, 2005a
Homoharringtonine	Chinese tree <i>Cephalotaxus harringtonia</i> var. <i>drupacea</i>	various leukemias	China	Cragg and Newman, 2005a
Kahalalide F	Mollusk <i>Elysia rufescens</i>	Antitumor activity	Tahiti, Hawaii, Guam	Chin et al., 2006
Discodermolide	Caribbean sea sponge <i>Discodermia dissoluta</i>	cancer	Caribbean Sea	Cragg and Newman, 2005a
Hemiasterlin	South African sea sponge, <i>Hemiasterella minor</i> and Papua New Guinea sea sponge <i>Cymbstela</i>	cancer	South Africa and Papua New Guinea	Cragg and Newman, 2005a
Ecteinascidin 743 and Aplidinen	Caribbean ascidian <i>Ecteinascidia turbinata</i> (Caribbean sea squirt)	in trials as anti-cancer agent	Caribbean Sea	Cragg and Newman 2005a
HTI-286	Hemiasterlin from the South African sponge	Anti-tumor agent	Marine - South Africa	Chin et al., 2006
Derivates from the plant genus <i>Terminalia</i>	<i>Terminalia</i> genus (plants)	potentially a treatment for malaria, hepatitis and cancer	Africa and India	Cragg and Newman, 2005a
Maytansine	<i>Maytenus serrata</i> (plant)	cancer	Ethiopia	Cragg and Newman, 2005a
Pervilleines	<i>Erythroxyllum pervillei</i> Baillon (plant)	in development to treat multi-drug resistance in cancer patients	Madagascar	Cragg and Newman, 2005a
Combretastatins	bush willow, <i>Combretum caffrum</i>	cancer	S. Africa	Cragg and Newman 2005a
<u>Trabectedin</u>	Caribbean sea squirt <i>Ecteinascidia turbinata</i>	anticancer agent	Caribbean Sea	Chivian and Bernstein, 2008
Fucoidan	brown algae	anticoagulant, cancer chemotherapeutic agent, contraceptive, antimicrobial -has shown to be effective against	Marine	Chivian and Bernstein, 2008

		leukemia type 1 (HTLV-1)		
Rapamycin	<i>Streptomyces hygroscopicus</i> (bacterium)	-anticancer agent -being investigated for the treatment of brain, lung, and endometrial cancers, leukemias and lymphomas -showed to prevent progression of Kaposi's sarcomas	Easter Island	Chivian and Bernstein, 2008

New HIV/AIDS Medications in Development

Drug or chemical compound	Source	Use	Country of origin	References
Carrageenans	red algae	showed useful as antiretrovirals, specifically for HIV and genital herpes, prevention of HPV -Carraguard developed from two carrageenan molecules, is in phase III clinical trial for HIV prevention	Pacific Ocean near Chile, Philippines, U.S.	Chivian and Bernstein, 2008
Calanolide A	a compound isolated from the latex of <i>Calophyllum lanigerum</i> , an extremely rare rain forest tree native to Borneo.	Anti-HIV	Borneo	“Anti-HIV drug from rainforest almost lost before its discovery,” Rhett A. Butler , mongabay.com September 13, 2005, http://news.mongabay.com/2005/0913-AIDS.html Cragg and Newman, 2005ab

New Antibiotic Medications in Development

Drug or chemical compound	Source	Use	Country of origin	References
Squalamine	Spiny dogfish, <i>Squalus acanthias</i>	antibiotic	worldwide – Atlantic and Pacific Oceans	Chin et al., 2006

New Antifungal Medications in Development

Drug or chemical compound	Source	Use	Country of origin	References
Ambuic acid	microbe <i>Pesalotiopsis microspora</i>	antifungal agent	Tropical rainforests	Cragg and Newman, 2005a

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