

BIG PHARMA'S EXPLOITATION OF PLANTS

all data sources hyperlinked

PHARMA'S FIRST PATENTS

MORPHINE¹

Year patented: **1805**
Company: **Merck**

HEROIN²

Year patented: **1898**
Company: **Bayer**

ASPIRIN³

Year patented: **1899**
Company: **Bayer**

Sources:

¹Merck

²Hosztafi S. *Acta Pharm Hung.* 2001; 71(2): 233-42.

³Bayer

PHARMA BY NUMBERS

Worldwide sales of pharmaceutical drugs
in 2017

US\$1.2 TRILLION

Source: IMS Health (2013)

Medical (incl. surgical) errors in USA

3RD LEADING CAUSE OF DEATH:
250,000 DEATHS PA

Source: Makary MA, Daniel M. *BMJ.* 2016; 353: i2139.

Biologics share of global market (2017)

19-20%

Source: IMS Health (2013)

No. of deaths from pharmaceutical drugs in
2015 (USA only)

443,900

Source: Mowry et al. *Clin Toxicol (Phila).* 2016;54(10):924-1109.

Percentage of global pharmaceutical market
by USA, EU5, Japan and China

70%

Source: IMS Health (2013)

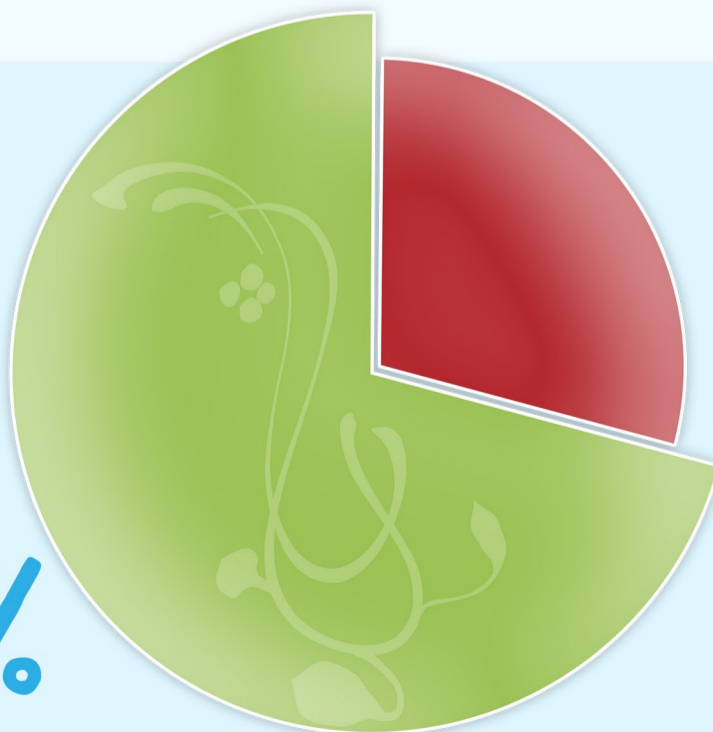
No. of deaths from supplements in 2015
(USA only)

0

Source: Mowry et al. *Clin Toxicol (Phila).* 2016;54(10):924-1109.

PERCENTAGE OF DRUGS FROM NATURAL OR SYNTHETIC SOURCES (1981 - 2014)

71%
Derived from nature
(synthetic analogues, semi-synthetic, etc)



29%
synthetic drugs
(not from natural sources)

Source: Newman & Cragg J. *Nat Prod* 2016, 79, 629-661.

COMMON PHARMACEUTICAL DRUGS BASED ON BOTANICAL EXTRACTS

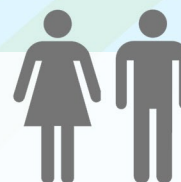
EXAMPLES OF BRAND NAMES	COMMON NAME OF DRUG	BOTANICAL ORIGIN	THERAPEUTIC AREA
Lanoxin, Lanoxicaps, Cardoxin, Digitek	Digoxin	<i>Digitalis purpurea</i>	Cardiotonic
Aspirin	Salicin	<i>Salix alba</i>	Analgaesic
AtroPen, Atreza, Sal-Tropine	Atropine	<i>Atropa belladonna</i>	Anti-cholinergic
Beta-Acetyldigoxin-ratiopharm, Digostada, Digox-CT, Novodigal	Acetyldigoxin	<i>Digitalis lanata</i>	Cardiotonic
Bronkaid, Primatene	Ephedrine	<i>Ephedra sinica</i>	Sympathomimetic, anti-histamine
Camptosar	Irinotecan	<i>Camptotheca acuminata</i>	Anti-cancer, anti-tumour agent
Chymodiactin	Chymopapain	<i>Carica papaya</i>	Proteolytic, mucolytic
Colcrys, Mitigare	Colchicine	<i>Colchicum autumnale</i>	Anti-tumour agent, anti-gout
Levsin	Hyoscyamine	<i>Hyoscyamus niger</i>	Anti-cholinergic
Maldemar, Scopace	Scopolamine	<i>Datura species</i>	Sedative
Mevacor, Altoco, Crestor, Zocor, Lipex	Statin	<i>Monascus purpureus</i>	Anti-lipidaemic
MST, Zomorph, Sevredol, Morphgesic, MXL or Oramorph	Morphine Sulphate	<i>Papaver somniferum</i>	Analgaesic
Oncovin, Vincasar	Vincristine	<i>Catharanthus roseus</i>	Anti-tumour, Anti-leukemic agent
Onxol, Taxol	Paclitaxel	<i>Taxus brevifolia</i>	Anti-tumour agent
Qualaquin, QM-260, Quinamm	Quinine	<i>Cinchona ledgeriana</i>	Anti-malarial, anti-pyretic
Quinora, Quinidex Extentabs, Quinaglute, Nuedexta	Quinidine	<i>Cinchona ledgeriana</i>	Anti-arrhythmic
Raudixin, Serpalan, Serpasil	Rhomitoxin	<i>Rhododendron molle</i>	Anti-hypertensive, tranquillizer
Razadyne	Galanthamine	<i>Lycoris squamigera</i>	Cholinesterase inhibitor
Salagen, Isopto Carpine, Pilocar, Adorbocarpine, Pilocpine HS	Pilocarpine	<i>Pilocarpus jaborandi</i>	Parasympathomimetic
Sinemet, Pharmacopa, Atamet, Stalevo, Madopar, and Prolopa	L-Dopa	<i>Mucuna sp</i>	Anti-parkinsonism
Velban, Alkaban-AQ	Vinblastine	<i>Catharanthus roseus</i>	Anti-tumour, Anti-leukemic agent
Vumon	Teniposide	<i>Podophyllum peltatum</i>	Antitumor agent

Source: ThoughtCo.

ASPIRIN

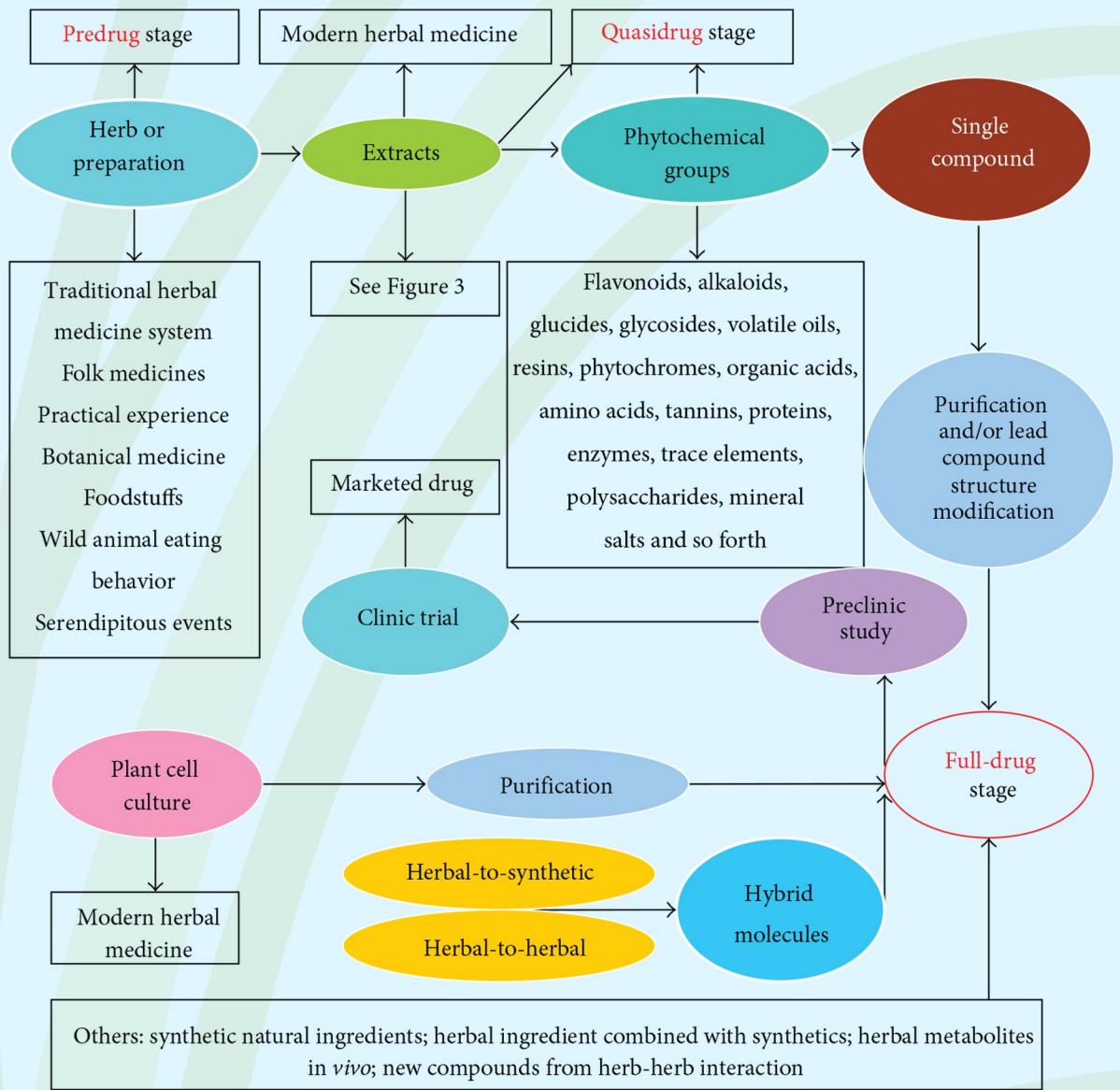
80%

of the world's population
rely on traditional herbal
medicines for primary health care.



Source: World Health Organization

DRUG DISCOVERY PROCESS FOR HERBAL MEDICINES



Source: Pan et al., Evidence-Based CAM 2013; 627375, 25 pp.

ENDANGERED PLANT SPECIES

31,517
plant species are
endangered
globally*

BOTANICAL SPECIES (WILD POPULATIONS) USED IN SUPPLEMENTS/MEDICINES 'AT RISK'

American Ginseng	<i>Panax quinquefolius</i>
Baobab	<i>Adansonia grandidieri</i>
Bushman's hat	<i>Hoodia</i> spp.
Dessert Broomrape	<i>Cistanche deserticola</i>
Goldenseal	<i>Hydrastis canadensis</i>
Himalayan Yew	<i>Taxus brevifolia</i>
May Apple	<i>Podophyllum hexandrum</i>
Spikenard	<i>Nardostachys grandiflora</i>
Venus flytrap	<i>Dionaea muscipula</i>
Yam	<i>Dioscorea deltoidea</i>

Source Cites Appendices I, II and III
Sources: * State of the World's Plants website
Source: † Cites Appendices I, II and III

www.anhinternational.org

anhinternational

anhcampaign

ANHIntl