

Pharmacognosy and its History: People, Plants and Natural Products

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ABSTRACT

Pharmacognosy, a vital discipline in the field of pharmacy, focuses on the study of natural products, particularly plants, and their components, for medicinal, therapeutic, and economic purposes. This branch of science has a rich history and has evolved alongside human civilization. The term "pharmacognosy" originates from the Greek words "pharmakon" (drug) and "gnosis" (knowledge), reflecting its essence in the science of drug knowledge. The history of pharmacognosy can be traced back to ancient civilizations, where indigenous people recognized the medicinal properties of various plants and natural substances. Early records from ancient Egypt, Mesopotamia, India, and China have highlighted the use of botanicals for healing purposes. These cultures have documented their herbal remedies, forming the foundation of pharmacognosy historical roots. During the Renaissance, herbalism and plant studies gained prominence in Europe. The 19th century marked a pivotal period for pharmacognosy, as scientific advances enabled the isolation and identification of active compounds from plants. Morphine, quinine, and digitalis were among the first isolated compounds to revolutionize medicine. This era saw the development of plant-based medicines and the establishment of pharmacopeias, which are authoritative references for drug standards. In the modern era, pharmacognosy incorporates advanced techniques, such as chromatography, spectroscopy, and genomics, to analyze and understand the chemical composition and pharmacological effects of natural products. This field has expanded to include marine organisms and microorganisms as potential sources of bioactive compounds. The importance of pharmacognosy remains undiminished, with a growing emphasis on natural product research, sustainability, and ethnobotanical knowledge. The exploration of plant biodiversity continues to yield novel drug leads, nutraceuticals, and Cosmeceuticals, with a renewed focus on traditional remedies validated through scientific investigation

INTRODUCTION

The history of pharmacy has been for centuries, equal to that of pharmacognosy, or to take a look at the material Medica, which had been acquired from natural assets, generally plants, but also minerals, animals, and fungi. Even as ecu traditions are particularly well recognized and their features have a strong effect on modern pharmacognosy in the West, nearly all societies have properly hooked up customs, several of which have rarely been studied. The observation of these traditions no longer affords a perception of how the sector has developed; however, it is also a charming example of our capability to develop a range of cultural practices. The use of medicinal plant life in Europe has been inspired by early European scholars, the concepts of lay humans, and, more recently, by an influx of human beings and products from non-ecu traditions. This historic review only covers Europe and the most famous traditions of Asia: traditional Chinese medicine (TCM), Ayurveda, and Jamu. TCM and Ayurveda will be mentioned in further studies because they are extensively used.

Early Arabic and Eu Facts

Humans have continually used flora in many ways in lifestyles spanning human evolution. The selection of medicinal plants is a conscious technique that has caused a tremendous variety of medicinal plants to be used by the server cultures of the arena. An early EU instance is medicinal mushrooms, which had been located inside the Austrian Italian 'iceman' of the Alps of Otztal (3300 BCE). Two walnut-sized items have been identified because the birch polypore (*Piptoporus betulinus*) is a bracket fungus that is common in alpine and other cooler environments. This species consists of poisonous natural products, and one of its lively components (agaric acid) is a completely sturdy and effective purgative, which ends in robust and brief-lasting diarrhea. It additionally has antibiotic effects against mycobacteria and toxic effects on diverse organisms (Capasso, 1998). Since the iceman also harbored eggs of the whip worm (*Trichuris trichiuria*) in his gut, he may well suffer from gastrointestinal cramps and anemia. The finding of *Piptoporus betulinus* points to the possible treatment of gastrointestinal problems using these mushrooms. Also, scarred cuts on the skin of the iceman might indicate the use of medicinal plants since the burning of herbs over an incision on the skin was a frequent practice in many ancient European cultures (Capasso 1998).{1}

Classical Arabic, Greek and Roman Records

The oldest written information in the European Arabic traditions comes from the Sumerians and Akkadians of Mesopotamia, thus originating from the same area as the archaeological records of Shanidar IV. Similar documents have survived for millennia in Egypt. The Egyptians documented their knowledge (including medical and pharmaceutical) on papyrus, which is paper made from *Cyperus aquaticus*, an aquatic sedge (also called papyrus) found throughout southern Europe and northern Africa. The most important of these writings is the Ebers Papyrus, which originates from around 1500 BC. This document was reputedly found in a tomb and bought in 1873 by George Ebers, who deposited it at the University of Leipzig and two years later published a facsimile edition. The Ebers Papyrus is a medical handbook covering all types of illnesses and

includes both empirical and symbolic forms of treatment. The diagnostic precision documented in this study was impressive. Other papyri have focused on recipes for pharmaceutical preparations (e.g., the so-called Berlin Papyrus). Greek medicine has been the focus of pharmaceutical research for many decades. The Greek scholar, Pedanius Dioscorides Anarzabos (1 BC) is considered to be the 'father of [Western] medicine.' His works were a doctrine governing pharmaceutical and medical practice for more than 1500 years, which has heavily influenced European pharmacies. He was an excellent pharmacognosist and has described more than 600 medicinal plants. Other Greek and Roman scholars were also influential in developing related fields of healthcare and natural sciences. Hippocrates, a Greek medical doctor (ca. 460–375 BC), came from the island of Kos and heavily influenced European medical traditions, and was the first of a series of (otherwise largely unknown) authors to produce the so-called Corpus Hippocraticum (a collection of works on medical practice). The Graeco-Roman medical doctor Claudius Galen Galenus (130–201 AD) summarized the complex body of the Graeco-Roman pharmacy and medicine, and his name survives in the pharmaceutical term 'galenicals. Pliny the Elder (23 or 24–79 AD, killed Pompeii (at the eruption of Vesuvius) and was the first to produce a 'cosmography' (a detailed account) of natural history, which included cosmology, mineralogy, botany, zoology, and medicinal products derived from plants and animals

Classical Chinese Records

Written documents on medicinal plants are essential elements of many Asian cultures. In China, The writings of India, Japan, and Indonesia point to a long tradition of plant use survival. In China, the field was developed as an element of Taoist thought: followers tried to assure a long life (or immortality) through meditation, special diets, medicinal plants, exercise, and specific sexual practices. The most important work in this tradition is Shen nong ben caojing (the 'Drug treatise of the divine countryman'), which is now only available as part of later compilations (Waller 1998; {2}). This 2200-year-old work includes 365 drugs of botanical origin. For each, the following information is provided: Geographical origin The optimum period for collection Therapeutic properties, forms of preparation, and dose. These scholarly ideas were passed on from master to student and were modified and adapted over centuries of use. Unfortunately, in none of the cases did we have a surviving written record. Table 2.1 summarizes some Chinese works that include important chapters on drugs. In the 16th century, the first systematic treatise on (herbal) drugs using a scientific method produced. The Ben Cao Gang Mu ('Drugs'), by Li Shizhen (1518–1593) contains information about 1892 drugs and more than 11,000 recipes are provided in the appendix. The drugs are classified into 16 categories (herbs, cereals, vegetables, and fruits). For each drug, the following information is provided (Waller 1998): Definition of the drug Selected commentaries Classification according to the four characteristics of temperatures and the five types of taste Uses (detailed information on uses (according to the criteria of Chinese medicine) Corrections of previous mistakes Methods of preparing the drug New features Examples of recipes The recognition of the need to further develop the usage of a plant, to

correct earlier mistakes, and to The inclusion of this new information is noteworthy. However, the numerous medical and pharmaceutical traditions of Chinese minorities were not included in these studies; therefore, we had no historical records of their pharmacopeias.

Other Asian Traditional Medicine

Overall, written records on other Asian medicines are less comprehensive than those on Chinese medicine. The oldest form of traditional Asian medicine, Ayurveda, is Hindu in origin and is a sort of art science and philosophy of life. In this respect, it resembles Traditional Chinese Medicine, and like TCM, it has influenced the development of more practical and less esoteric forms of medicine, which are used for routine or minor illnesses in the home. Related types of medicine include Jamu, the traditional system in Indonesia, which is briefly described below. All of these forms of traditional medicine use herbs and minerals and have many common features. Naturally, many plants are common to all systems and to various official drugs that were formerly (or still are) included in the The British Pharmacopoeia (BP), European Pharmacopoeia (Eur. Ph.), and US Pharmacopoeia (USP) Ayurveda is arguably one of the most ancient of all the recorded medicinal traditions. It is considered to be the origin of systematized medicine because ancient Hindu writings on medicine contain no references to foreign medicine, whereas Greek and Middle Eastern texts refer to the ideas and drugs of India. origin. Dioscorides (who influenced Hippocrates) is thought to have taken many of his ideas from India, so it looks as though the first comprehensive Medical knowledge originated there. The term 'Ayurveda' comes from Ayur meaning 'life' and Veda meaning science. and was a later addition to Hindu sacred writing from 1200 BC, called Artharva-Veda. The first school to teach Ayurvedic medicine was the University of Banaras in 500 BC, where the great Samhita (or encyclopedia of medicine) was written. Seven hundred years later, another great encyclopedia was written, and these two form the basis of Ayurveda. The living and non-living environments, including humans, are composed of the elements earth (Prithvi), water (Jala), fire (Tejas), air (Vayu), and space (akasa). To understand these traditions, the concepts of impurity and cleansing are essential. Illness is the consequence of the imbalance between various elements, and it is the goal of treatment to restore this balance.

Jammu

Indonesian traditional medicine, Jamu, is thought to have originated in the ancient palaces of Surakarta and Yogyakarta in central Java from ancient Javanese cultural practices, as well as the influence of Chinese, Indian, and Arabian medicine. Carvings at the temple of Borobudur dating to 800-900 AD depict the use of kalpataru leaves ('the tree that never dies') to make medicines. The Javanese influence spread to Bali as links were established and in 1343 an army of the Majapahit kingdom of eastern Java was sent to subjugate the Balinese people. Success was short-lived and the The Balinese retaliated and regained their independence. After Islam was adopted in Java and the Majapahit Empire was destroyed, many Javanese fled, mainly to Bali, taking their books, culture, and customs, including medicine, with them. In this way, Javanese traditions survived in Bali more or less intact, and the island remained relatively isolated until the Dutch conquest in 1908. Other islands in the archipelago used

Jamu, with regional variations. There are a few surviving records, but often those that exist are closely guarded by healers or their families. They are considered sacred and, For example, those in the palace of Yogyakarta are close to outsiders. In Bali, medical knowledge was inscribed on lontar leaves (a type of palm), and Java on paper. Consequently, they are often under poor conditions and are difficult to read. Two of the most important manuscripts – Serat kawruh bab - jump ('A treatise on all manner of cures') and Serat Centhini ('Book of Centhini') – are in the Surakarta Palace Library. The former contains 1734 formulae made from natural materials and indications for their use. The Serat Centhini is an 18th-century work of 12 volumes, although it contains much information and advice on the general nature and numerous folk tales, it is still an excellent account of medical treatment in ancient Java.

The status of Jammu started to improve in ca. 1940 with the Second Congress of Indonesian Physicians when it was decided that an in-depth study of traditional medicine was needed. A further impetus was the Japanese occupation of 1942–1944 when the Dai Nippon government set up the Indonesian Traditional Medicines Committee; another boost occurred during Indonesia's War of Independence when orthodox medicine was in short supply. President Sukarno decreed that the nation should be self-supporting, so many people turned to the traditional remedies used by their ancestors (Beers 2001){3}. Jamu contains many elements of TCM, such as treating 'hot' illnesses with 'cold' remedies and Ayurveda, in which religious aspects and the use of massage are very important. Remedies from Indonesia, such as clove (*Syzygium aromaticum*), nutmeg (*Myristica fragrans*), Java tea [*Orthosiphon stamineus* (=O. aristatus), and *Orthosiphon* spp.], jambul (*Eugenia Jambolana*) and galangal (*Alpinia galanga*) are still used around the world as medicines or culinary spices.

Kampo

Kampo, or conventional Japanese medicinal drug, is sometimes known as low-dose TCM till 1875(whilst the clinical examination for Japanese medical doctors became restrained to Western medicinal drugs), the Chinese language Machines became the main form of clinical practice in Japan, having arrived in Korea and been absorbed into native medicinal drugs. exchange of students with China intended that nonsecular and medical practices were without a doubt equal; as an example, the scientific machine mounted in Japan in 701 was a genuine copy of that of the T'ang dynasty in China. inside the Nara length (710–783), whilst Buddhism has become even more famous, the remedy became extremely complicated and protected sides of Ayurveda as properly as Arabian medicinal drugs. the native medication remained inside the background and, after issues that it'd be subsumed into Chinese medicine, the compendium of jap medicine, Daidoruijoho, become compiled in 808 at the orders of Emperor HeiZei. In 894, legitimate cultural exchange with China turned into halted, and local remedy turned temporarily reinstated. information won from China, however, persevered to be assimilated, and in 984 the court health practitioner Yasuyori Tamba compiled the Ishinho, which consisted of 30 scrolls detailing the scientific know-how of the Sui and T'ang dynasties. even though primarily based

totally on Chinese language remedies, Nevertheless, it was helpful as a document of medicine as practiced in Japan at that time.

In 1184, the framework began to exchange reformed gadgets turned into one introduced by Yorimoto Minamoto, in which local medication became blanketed, and by way of 1574, Dosan Manase had set down all the elements of scientific concepts that became a shape of unbiased Japanese medication at some stage in the Edo period. This resulted in Kampo, and it remained the main form of medication until the creation of Western medicinal drugs in 1771, with the aid of Genpaku Sugita. Even though Sugita did not reject Kampo and advocated its use in his textbook *Keieiyawa*, it fell into decline due to a loss of proof and an increasing number of scholastic rather than empirical techniques to remedy the direction of the give-up of the 19th century, notwithstanding important activities consisting of the isolation of ephedrine (Fig. 2.2) with the aid of Nagayoshi Nagai and Kampo were, nonetheless, in large part, disregarded by the Japanese medical status quo. However, by 1940, a university path in Kampo was instituted. Currently, most faculties of medicine in Japan offer guides on traditional medicinal drugs integrated with Western medicine. In 1983, it was estimated that about 40% of Japanese clinicians were writing Kampo herbal prescriptions, and today's research Japan and Korea continue to confirm the validity of many of their remedies (Takemi et al., 1985).

The European Middle Ages and Arabia

After the conquest of the southern part of the Roman Empire by Arab troops, Greek medical texts were translated into Arabic and adapted to the needs of Arabs. Many Greek texts survived only in Arab transcripts. Ibn Sina or Avicenna from Afshana (980–1037) wrote a monumental treatise *Qanun fill tibt* ('Canon of medicine'; ca. 1020), which was heavily influenced by Galen, which in turn has influenced scholastic traditions, especially in Southern Europe. This five-volume book remained the most influential work in the field of medicine and pharmacy for more than 500 years, together with direct interpretations of Dioscorides work. While many Arab scholars.

Table 1. Species of Plants Listed in the Copitulore De Villis

BOTANICAL NAME	FAMILY	ENGLISH NAME	GEOGRAPHICAL ORIGIN
<i>Achillea millefolium</i> ^{Ab}	Asteraceae	Milfoil	Northern hemisphere
<i>Agrimonia eupatoria</i> ^{Ab}	Rosaceae	Agrimony	Europe, south-eastern Asia
<i>Allium ascalonicum</i>	Alliaceae	Shallot	Western Asia
<i>Allium cepa</i>	Alliaceae	Onion	Western Persia
<i>Allium porrum</i> (?)	Alliaceae	Leek	Western Mediterranean
<i>Allium sativum</i>	Alliaceae	Garlic	South-eastern Asia
<i>Allium schoenoprasum</i>	Alliaceae	Chives	Southern Europe
<i>Althea officinalis</i>	Malvaceae	Marsh mallow	Eastern Mediterranean
<i>Anethum graveolens</i>	Apiaceae	Dill	Western Asia, southern Europe
<i>Anthriscus cerefolium</i> ^a	Poaceae	Chervil	Western Asia, south-eastern Europe
<i>Apium graveolens</i> ^a	Apiaceae	Celery	Western Asia, southern Europe
<i>Artemisia abrotanum</i> ^a	Asteraceae	Southernwood, old man	Eastern Europe, western Asia
<i>Artemisia absinthium</i> ^{Ab}	Asteraceae	Wormwood	Europe, Asia
<i>Beta vulgaris</i>	Chenopodiaceae	Beetroot	Mediterranean and Atlantic Coast
<i>Betonica officinalis</i> (<i>Stachys officinalis</i>) ^{Ab}	Lamiaceae	Betonica	Western Europe, Mediterranean
<i>Brassica oleracea</i>	Brassicaceae	Kale, borecole	Mediterranean and Atlantic Coast
<i>Brassica oleracea</i> var. <i>gongyloides</i>	Brassicaceae	Kohlrabi	Mediterranean and Atlantic Coast
<i>Castanea sativa</i>	Fagaceae	Sweet chestnut	Southern Europe, Africa, south-eastern Asia
<i>Chrysanthemum balsamita</i> ^a	Asteraceae	Balsamite, costmary	South-eastern Europe
<i>Chrysanthemum vulgare</i>	Asteraceae	Tansy	Europe, Caucasus
<i>Cichorium intybus</i>	Asteraceae	Chicory	Europe, Asia
<i>Coriandrum sativum</i>	Apiaceae	Coriander	Orient
<i>Corylus avellana</i>	Betulaceae	Hazel	Europe, Asia
<i>Cucumis melo</i> ^a	Cucurbitaceae	Melon	Africa, southern Asia
<i>Cucumis sativus</i>	Cucurbitaceae	Cucumber	Western India
<i>Cuminum cyminum</i>	Apiaceae	Cumin	Turkey, eastern Europe
<i>Cydonia oblonga</i>	Rosaceae	Quince	Western Asia
<i>Ficus carica</i>	Moraceae	Fig	Western Mediterranean
<i>Foeniculum vulgare</i> ^a	Apiaceae	Fennel	Mediterranean
<i>Iris germanica</i> ^a	Iridaceae	Iris	South-eastern Europe
<i>Juglans regia</i>	Juglandaceae	European walnut	Western Asia, eastern Europe
<i>Juniperus sabina</i>	Juniperaceae	Juniper	Alps, southern Europe
<i>Lactuca sativa</i>	Asteraceae	Lettuce	Western Asia, southern Europe
<i>Lagenaria siceraria</i> ^a	Cucurbitaceae	Calabash, bottle gourd	Africa, Asia (America)
<i>Laurus nobilis</i>	Lauraceae	(Bay) laurel	South-eastern Europe, south-western Asia
<i>Lepidium sativum</i>	Brassicaceae	Pepperwort	Orient
<i>Levisticum officinale</i> ^a	Apiaceae	Lovage	Persia/Iran
<i>Lilium candidum</i> ^a	Liliaceae	Lily	Western Asia
<i>Malus communis</i>	Rosaceae	Apple	Europe, western Asia
<i>Malva neglecta</i>	Malvaceae	Mallow	Europe, Asia
<i>Marrubium vulgare</i> ^{a,b}	Lamiaceae	Horchound	Mediterranean

Worked in eastern The Arabian and Arab-dominated parts of Spain became the second center for classical Arab medicine. An important early example is Umdat at Tabb. ('The medical references') by an unknown botanist from Seville. Thanks to the tolerant policies of the Arab administration, many of the most influential representatives of Arab scholarly traditions were Jews, including Maimonides (1135–1204) and Averroes (1126–1198). In Christian parts of Europe, the texts of the classical Greeks and Romans were copied from Arabian records and are often annotated by monks. The Italian monastery of Monte The casino is one of the earliest examples of such a tradition; others developed around the monasteries of Chartres (France) and St. Gall (Switzerland). A common element of all monasteries was a medicinal plant garden, which was used both for growing herbs to treat patients and for teaching medicinal plants to the younger generations. The species included in these gardens were common to most monasteries, and many of these species are

important medicinal plants. Of particular interest is The Capitulare de Villis of Charles the Great (Charlemagne, 747–814), who ordered that medicinal (and other) plants should be grown in the King's gardens and in monasteries, specifically listed 24 species. Walahfri(e)d Strabo (808 or 809– 849), Abbot of the monastery of Reichenau (Lake Constance), deserves mention because of his *Liber de Cultural hortum* ('Book on the growing of plants), the first 'textbook' on (medical) botany, and the *Hortulus*, a Latin poem about the medical plants grown in the district. *Hortulus* is not only famous as a piece of poetry but also because of its vivid and excellent descriptions of the appearance and virtues of medicinal plants. Table 2.2 lists the plants reported in the *Capitulare de Villas* and some other sources from the 10th and 11th centuries. Currently, many of these plants are still important medicinally or in other ways. Many of these are vegetables, fruits, or other foods. The list shows not only the long tradition of medicinal plant use in Europe but also the importance of these resources to the state and religious powers during the Middle Ages. Although these were not necessarily of interest in scholarly writings, they were at least practical resources. A plan (which was not executed) for a medicinal herb garden for the Cloister of St Galls (Switzerland), dating from the year 820, has been preserved and provides an account of the species that were to be grown in a cloister garden. In general, pharmacy and medicine were of minor importance in European scholastic traditions, as shown, for example, by the fact that in the Monastery of St. Gall, there were only six books on medicine but 1,000 on theology. Scholastic traditions, influenced by Greek Arab medicine and philosophy, have been practiced by numerous European cloisters. In Arab-dominated Sicily, the first medical center of medieval Europe was developed in Salerno (12th century). Until In 1130, before the Council of Clermont, the monks combined medical and theological work, but On this date, only lay members of the monastery were permitted the use of medicine. Simultaneously, the first universities (Paris 1110, Bologna 1113, Oxford 1167, Montpellier 1181, and Prague 1348) were founded and provided training in medicine.

The climax of medieval medico-botanical literature was reached in the 11th century with *De virus Herbarium* ('On the virtues of herbs'), and *Macer floridus*, a Latin poem from around 1070 AD, presumed to be by Odo of Meune (Magdunensis), the Abbot of Beuprai. This educational poem presents 65 medicinal plants and spices. Other frequently cited sources include descriptions of the medicinal virtues of plants by the Benedictine nun, the early mystic, and the abbess Hildegard of Bingen (1098–1179). Her Herbals were rapidly becoming available in various European languages and many later authors copied, translated, and re-interpreted the earlier books. This was especially so for the woodcuts used for illustration (see Fig. 2.4); these were often used in several editions or were copied. The herbals changed the role of European pharmacy and medicine and influenced contemporary orally transmitted popular medicine. Previously there had been two lines of practice: the herbal traditions of the monasteries and the popular tradition, which remains practically unknown. Books in European languages made scholastic information much more widely available, and it seems that the literate population was eager to learn about these

medico-pharmaceutical practices. These new books became the driving force of European 'Phytotherapy, which developed rapidly over the next centuries. The trade in botanical drugs increased during this period. From the East Indies came nutmeg (*Myristica fragrans*, Myristicaceae), already used by the Greeks as an aromatic and for treating gastrointestinal problems. Rhubarb (*Rheum palmatum*) and Rh. officinale, Polygonaceae) arrived.

Table 2. Examples of Early European Herbals From the 15th and 16th Centuries
 (Based on Leibrock- Plehn 1992 and Arber 1938)

YEAR	AUTHOR	TITLE	LANGUAGE
1478	Dioscorides	De materia medica	Latin
1481	Anon.	The Latin Herbarius	Latin
1485	Anon.	The German Herbarius (<i>Gart der Gesundheit</i>)	German
1525	Anon.	Herball (<i>Aylchard Banckes' Herball</i>)	English
1526 (ca.)	Anon.	<i>Le grand herbier en francoys</i>	French
1530	Otto Brunfels	<i>Herbarium vivae eicones ad naturae imitationem</i>	Latin
1530-1574	Nicolás Monardes	<i>Historia medicinal de las cosas que se traen de nuestras Indias Occidentales que sirven en medicina</i>	Spanish
1532	Otto Brunfels	<i>Contrafayt Kreüterbuch</i>	German
1533	Eucharis Rösslin/Adam Lonitzer	<i>Kreüterbuch von allen Erdtgewächs</i>	German
1534	Various	<i>Ograd zdrowia</i> ('The garden of health')	Polish
1541	Conradus Gesnerus	<i>Historia plantarum et vires ex Dioscorides</i>	Latin
1542	Leonhard Fuchs (Fig. 2.3)	<i>De historia stirpium commentarii insignes</i>	Latin
1543	Leonhard Fuchs	<i>New Kreüterbuch</i>	German
1546	Hieronymus Bock	<i>Kreüterbuch</i>	German
1546	Dioskorides	<i>Kreüter Buch</i> (translated by J Dantzen von Ast)	German
1548	William Turner	<i>Libellus de re herbaria novus, in quo herbarium</i>	Latin
1554	Remibertus Dodonaeus	<i>Cruyterboeck</i>	Flemish
1554	Pietro A Mattioli	<i>Commentarii, in libros sex pedacii Dioscoridis Anazarbi</i>	Latin/ Italian
1560 (ca.)	(Pseudo) Albertus Magnus	<i>Ein neuer Albert Magnus</i>	German
1563	Garcia ab Horto (Orta/d'Orta)	<i>Orta/coloquios das simples, e drogas he cousas medicinais da India</i> (Portuguese d'Orta; first published in Goa, India)	Portuguese
1576	Carolus Clusius	<i>Rariorum aliquot stirpium per hispanias observatum historia</i>	Latin
1588	Jakob Theodor (Tabernaemontanus)	<i>Neuw Kreüterbuch</i>	German
1596	Casparus Bauhinus	<i>Phytopinax</i>	Latin
1596	John Gerard	<i>General historie of plantes</i> (or The 'Herball')	English
1597	Antoine Constantin	<i>Brief traicté de la pharmacie provinciale...</i>	French

In Europe from India in the 10th century and was employed as a strong purgative. Another important change at this time was the discovery of healing plants with new properties, during the exploration and conquest of the 'New Worlds' – the Americas, as well as some regions of Asia and Africa. For example, guayaba (*Guaiacum sanctum*, Zygophyllaceae), from MesoAmerica, was used against syphilis, despite its lack of any relevant pharmacological effects. Nicolás Monardes was particularly important in the dissemination of knowledge about medicinal plants from the New World. His principal work, *Historia medicinal de las cosas que se traen de nuestras Indias Occidentales que sirven en medicina* ('Medical history of all those things which are brought from our Western India and may be used as medicines') was published in 1574. Some parts had appeared as early as ca. 1530. Another influential scholar during This period was led by Theophrastus Bombastus of Hohenheim, better known as Paracelsus (1493–1541). His importance lies less in the written record he left but more in his medical

and pharmaceutical inventions and concepts. He rejected the established medical system and, after a fierce fight with the medical faculty of Basel in 1528, fled to Salzburg. According to some sources, he had publicly burned the 'Canon of Medicine' by Avicenna. He introduced minerals into medical practice and called for the extraction of the active principle from animals, plants, or minerals, a goal that was not achieved until the beginning of the 19th century. He regarded the human body as a 'microcosm', with In her works, *Physica and Causae et Curae*, she included many remedies that were popularly used during the 12th century. Her writings also focus on prophetic and mystical topics. The works of both scholars are only available as later copies in other texts, which unfortunately give a rather distorted idea of the originals, as they are heavily reinterpreted.its substances and powers needed to be brought into harmony with the 'macrocosm, or universe. According to Paracelsus, healing was due to 'the power of life, which is only supported by the medical doctor and medicine'. Although some of his ideas anticipated later ones, at the time they were largely rejected. The first pharmacopeias were issued by autonomous cities and became legally binding documents on the composition, preparation, and storage of.

- *Ricettario Fiorentino* (Florence, Italy), 1498.
- *Pharmacopoeia of Nuremberg* (Frankonia, Germany) or *Pharmacorum omnium*, 1546.
- *Pharmacopoeia Londiniensis* (UK), 1618, one of the most influential early pharmaceutical treatises.

Figure 1. The First Pharmacopoeias

Pharmaceuticals

These pharmacopeias were mainly intended to bring some order to the many forms of preparation available at the time and the varying composition of medicines, and to reduce the problems arising out of their variability. Another development was the establishment of independent guilds specializing in the sale of medicinal plants, even though apothecaries had practiced this for centuries. In 1617, the worshipful Society of Apothecaries was founded in London, and in 1673 it formed its garden of medicinal plants, known today as the Chelsea Physic Garden (Minter 2000). One of the most well-known English apothecaries (and astrologers) of the 17th century is Nicholas Culpeper (1616–1654) is best known for his 'English physician—more commonly called 'Culpeper's Herbal'. This is the only herb that rivals in popularity John Gerard's general history of plants, but his arrogant His dismissal of orthodox practitioners made him very unpopular with many physicians. Culpeper describes plants that grow in Britain and can be used to cure a person or preserve one's body health'. He is also known for his translations. A physical directory (from Latin into English) of the London Pharmacopoeia of 1618, published in 1649 (Arber 1938){4}.

Medical Herbalism

The use of medicinal plants was always been an important part of the medical systems of the world, and Europe was no exception. Little is known about popular traditions in medieval and early modern-day Europe and our

expertise starts with the availability of written (revealed) information on medicinal plants. use by way of not-unusual human beings. As pointed out using Griggs (1981, p. 88), a female in the seventeenth century became a 'superwoman' able to administer 'any healthful receipts or drugs for the best of the family's health'. an ordinary example of this sort of treatment is foxglove (*Digitalis purpurea*), reportedly utilized by an English housewife to deal with dropsy, after which greater systematically by Doctor William Withering (1741–1799; Fig. 2.5). Withering converted the orally transmitted knowledge of British herbalism right into a form of medicine that could be utilized by clinical doctors. before that, herbalism changed to more of a clinical exercise that interested the patient welfare and much less of a scientific examination of the virtues and chemical homes of medicinal vegetation.

European Pharmacognosy and Natural Product Chemistry in the 18th and 19th Centuries

In the 17th and 18th centuries, understanding approximately plant-derived drugs extended, however, all try to 'distillate' the active substances from flowers had been unsuccessful. The main final results throughout this era have been special observations of the medical usefulness of medicinal products, which were recorded in preceding centuries or imported from non-EU countries. The following predominant shift in emphasis got here in the early 19th century when it has become clear that the pharmaceutical properties of plant life are due to specific molecules that can be isolated and characterized. This caused an improvement in the discipline of research now called natural product chemistry, specifically for plants, phytochemistry. Pure chemical entities were isolated and their structures elucidated. Some were then developed into medicines or chemically modified for medicinal use. Examples of such early pure drugs include: morphine from opium poppy (*Papaver somniferum*, *Papaver* aceae), which was first identified by FW Sertu corner of Germany (Fig. 2).



Figure 2. FW Serturner. Reproduced with Permission from the Wood Library-Museum of Anesthesiology, Park Ridge, IL, London

In 1804 and chemically characterized in 1817 as an alkaloid. The full structure was established in 1923, by JM Gull and and R Robinson, in Manchester quinine (Fig. 2.8), from cinchona bark (*Cinchona succuba* and others), was first isolated by Pierre Joseph Pelletier and Joseph Bienaime Caventou of France in 1820; the structure was elucidated in the 1880s by various laboratories. Pelletier and Caventou was also instrumental in isolating many of the alkaloids mentioned below salicin, from willow bark (*Salix* spp., Salicaceae), was first isolated by Johannes Buchner in Germany. It was derivatized first (in 1838) by Rafaele Pirea (France) to yield salicylic acid, and later (1899) by the Bayer company, to yield acetyl salicylic acid, or aspirin – a compound that was previously known but had not been exploited pharmaceutically (Fig 4).

Atropine (1833), from belladonna (*Atropa belladonna*, Solanaceae), was used at the time for asthma.

Caffeine (1821), from the coffee shrub (*Coffea arabica* and *C. canephora*, Rubiaceae); its structure was elucidated in 1882.

Coniine, a highly poisonous natural product, was first isolated in 1826 from hemlock (*Conium maculatum*, Apiaceae). Its properties had been known for years (Socrates used hemlock to commit suicide) and it was the first alkaloid to have its structure elucidated (1870). Some years later it was synthesized (1889).

Emetine (1817), from ipecacuanha (*Cephaelis ipecacuanha*, Rubiaceae), was fully characterized as late as 1948 and used as an emetic as well as in cough medications.

Strychnine (1817), from *Strychnos* spp. (Loganiaceae), was used as a tonic and stimulant (Sneider 1996).

Figure 3. Examples of Pure Compounds Isolated During the Early 19th Century

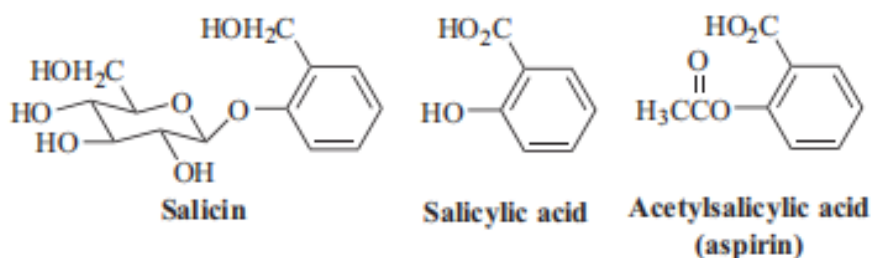


Figure 4. A Compound Previously Known but not yet Exploited Pharmaceutically

Posthumously posted e-book Lehrbuch der Materia Medica (1811). this era consequently noticed the improvement of a well-defined medical subject of inquiry, which evolved unexpectedly during the century. one of the foremost achievements of 19th-century science in the field of medicinal flowers turned into the development of techniques to look at the pharmacological effects of

compounds and extracts. The French physiologist Claude Bernard (1813–1878), who conducted exact research on the pharmacological consequences of plant extracts, has to be considered certainly one of the first scientists to adopt this lifestyle. He became particularly interested in curare, a drug and arrow poison used by the American Indians of the Amazon, and the point of interest in the research of many explorers. The ethnobotanical story of Curare is described similarly in Bernard's cited that if Curare becomes administered into living tissue without delay, thru an arrow or a poisoned instrument, it led to the loss of life extra quickly, and that dying befell more swiftly if dissolved curare become used in preference to the dried toxin (Bernard 1966: 95–96){5}. He become also able to exhibit that the foremost cause of death changed into muscular paralysis and that animals confirmed no signs of anxiety or pain. further investigations confirmed that if the blood waft in the hind leg of a frog was interrupted using a ligature (without affecting the innervation) and the curare was delivered through damage of that limb, the limb retained mobility and the animal did now not die [Bernard 1966:95–96, 115 (Orig. 1864)]. one of the facts cited by way of all folks who pronounced on curare is the lack of toxicity of the poison in the gastrointestinal tract, and, certainly, the Indians used curare both as a poison and as a remedy for the stomach. Bernard went on to say:

In our physiological research, we were capable of becoming aware of the impact of the yank arrow poison curare as one at the nervous motoric detail and in the end, to decide a mechanism which ends up in loss of life is an inert the potential of this poisoned substance, however, we must stop here and have we reached the border where our current [19th century] What does science enable us to achieve? I do not think so. One has to separate the active principle of curare from the foreign substances with which it is mixed, and one also has to study which physical and chemical changes the toxic substance imprints onto the organic element [i.e. the body] to paralyze its activity. [Bernard 1966:121 (Orig. 1864), translation MH] Later, the botanical source of curare was identified as *Chondrodendron tomentosum* Ruiz et Pavon, and the agent largely responsible for the pharmacological but which allowed the development of a new approach to the study and the pharmaceutical use of plants. Ultimately, herbal remedies became chemically defined drugs.

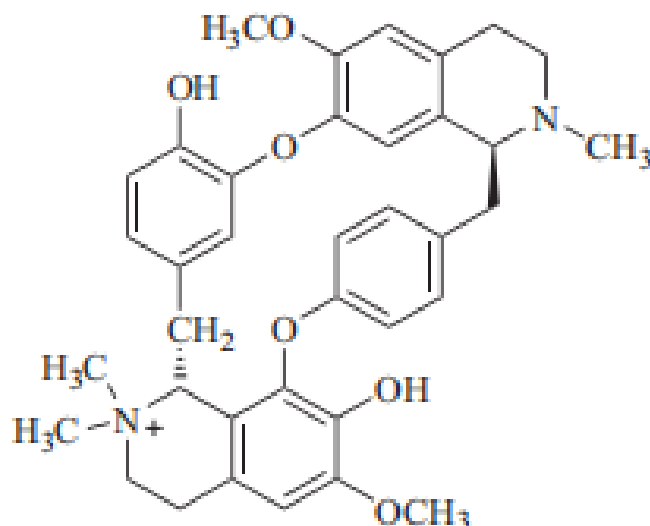


Figure 5. Tubocurarine

The 20th Century

One of the most important events that influenced the use of medicinal plants in the Western world in the last century was the serendipitous discovery of the antibacterial properties of fungal metabolites such as benzylpenicillin, by Florey and Fleming in 1928 at St. Mary's Hospital (London). These natural products changed forever the perception and use of plant-derived metabolites as medicines by both scientists and the lay public. Another important development came with the advent of synthetic chemistry in the field of pharmacy. Many of these studies involved compounds that were synthesized because of their potential as a coloring material (Sneader 1996){6}. The first successful use of a synthetic compound as a chemotherapeutic agent was achieved by Paul Ehrlich in Germany (1854–1915); He successfully used methylene blue in the treatment of mild forms of malaria in 1891. Unfortunately, this finding could not be extended to the more severe forms of malaria common in the tropics. Many further studies on the therapeutic properties of dyes and other synthetic compounds followed. The latter part of the 20th century saw a rapid expansion in knowledge of secondary natural products, their biosynthesis, and their biological and pharmacological effects. A large number of natural products or their derivatives were introduced as medicines, including many anti-cancer agents (paclitaxel, the vinca alkaloids; the anti-malarial agent artemisinin, and the anti-dementia medication galanthamine, to name just a few (Cragg et al., 2005; Heinrich, 2010){7,8}. Heinrich & Teoh (2004){9} Numerous examples of drugs that are natural products, their derivatives, or a pharmacophore based on a natural product have been introduced. There is now a better understanding of the genetic basis of the reactions that give rise to such compounds, as well as the biochemical (and in many cases genetic) basis of many important illnesses. This has opened up new opportunities and avenues for drug development. activity first isolated. It was found to be an alkaloid and named D-tubocurarine because of its source, 'tube curare', so-called because of the bamboo tubes used as storage containers. In 1947 the structure of this complex alkaloid, a bisbenzylisoquinoline, was finally established (Fig. 2.10). The story of this poison is

one of the most fascinating examples of transforming a drug used in an indigenous culture into a medication and research tool, and, although D-tubocurarine is now used less frequently for muscular relaxation during surgery, it has been used as a template for the development of newer and better drugs. The 19th century thus saw the integration of ethnobotanical, pharmacological, and phytochemical studies, a process that had taken many decades.

LITERATURE REVIEW

The assets to be had for information on the history of medicinal (in addition to dietary and poisonous) Plant use has been documented in archaeological statistics and written documents. The desire to summarize statistics for Destiny's generations and to offer the writings of classical (basically early Greek) students to a broader target market has become the primary stimulus for writing about medicinal plant life. The traditions of Japan, India, and China have been documented in many early manuscripts and books (Mazar 1998; Waller 1998). No written statistics are to be had for other areas of the world either because they have been in no way produced (for example, Australia, many elements of Africa and South America, and a few regions of Asia. or due to the fact documents have been misplaced or destroyed through (in particular, European) invaders (e.g., in Meso America). consequently, for lots of parts of the world, the primarily written information is reported from early tourists sent through their respective feudal governments to explore the wealth of the New World. These people blanketed missionaries, explorers, salesmen, researchers, and later, colonial officers. The information became important to ecu societies for reasons of ability dangers, including poisoned arrows posing a chance to explorers and settlers, in addition to the possibility of finding new drugs.

METHODOLOGY

The research method employed for this study involved an in-depth examination of historical texts, documents, and manuscripts from various cultures to trace the development of pharmacognosy and medicinal plant use. Archaeological records, ancient writings, and scholarly works were reviewed to understand the cultural, philosophical, and practical aspects of traditional medicine. Primary sources, such as the Shen Nong Ben Caojing and the Ben Cao Gang Mu, were accessed to gain insights into the knowledge, practices, and beliefs related to medicinal plants in classical Chinese records. Similar primary and secondary sources were consulted for other Asian traditions, such as Ayurveda, to comprehensively analyze their historical contributions to medicinal practices.

RESULTS

Classical Chinese Records: The study unveils the profound influence of Taoist thought on the development of Chinese medicinal practices. The Shen Nong Ben Caojing, a work dating back 2200 years, provides a detailed account of 365 botanical drugs, highlighting their origins, collection times, therapeutic properties, and preparation methods. The subsequent Ben Cao Gang Mu by Li

Shizhen in the 16th century builds on this foundation, offering comprehensive insights into herbal drugs and their classifications, uses, and corrections.

Other Asian Traditional Medicine: The exploration extends to Ayurveda, an ancient Hindu tradition that underpins a holistic approach to health. Ayurvedic principles, deeply rooted in the balance of elements within the body and the environment, have contributed to the longevity and well-being of individuals through practices focused on cleansing and restoring harmony.

DISCUSSION

Cultural and Philosophical Foundations: The discussion underscores the pivotal role of cultural and philosophical beliefs in shaping the medicinal practices of these traditions. Chinese medicine's alignment with Taoist ideals and Ayurveda's integration with Hindu principles showcase the profound impact of belief systems on health and healing.

Holistic Approaches: Both Chinese and Ayurvedic traditions exemplify holistic approaches to health, emphasizing the interconnections of physical, mental, and spiritual well-being. The focus on balance and harmony resonates across these systems, mirroring their recognition of the intricate interplay between individuals and their environments.

Cross-Cultural Exchange: The discussion highlights the interplay between different medicinal traditions and the influence they've had on one another. Ayurveda's potential influence on Greek and Middle Eastern texts emphasizes the global exchange of medical knowledge and ideas throughout history.

CONCLUSIONS AND RECOMMENDATIONS

The research illuminates the historical evolution of medicinal practices within classical Chinese and other Asian traditions. The profound impact of cultural philosophies on these practices is evident, shaping holistic approaches to health and well-being. From China's Taoist-driven pursuit of longevity to India's Ayurvedic wisdom, these traditions mirror humanity's enduring quest for wellness. The shared principles of balance, harmony, and interconnections underscore the timelessness of their insights, inviting a reevaluation of contemporary healthcare through the lens of ancient wisdom.

In sum, this study provides a comprehensive exploration of classical Chinese and other Asian medicinal traditions, celebrating their contributions to holistic health and emphasizing the importance of cultural context in shaping medical practices throughout history.

FURTHER STUDY

This research still has related limitations so it is necessary to carry out further research on the topic of Pharmacognosy and its History: Humans, Plants and Natural Products in order to perfect this research and increase insight for readers.

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Declaration of Interest

I at this moment declare that :

- I have no pecuniary or other personal interest, direct or indirect, in any matter that raises or may raise a conflict with my duties as a manager of my office Management
- Conflicts of Interest
- The authors declare that they have no conflicts of interest.
- Financial support and sponsorship
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