

Botanical name of the Ceylon cinnamon plant (Sinhala=*Kurundu*)

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Abstract: Traces the origin of Ceylon cinnamon. Gives reasons for its superiority over other types grown in other countries and establish identity of Ceylon cinnamon. Lists the different botanical names given by botanists to Ceylon cinnamon and explains the problem arisen due to rule of priority by relying only on scant bibliographical information. Indicates that in cases of doubt, it is advisable to conserve the established name as provided by the Regulation 14 of the ICN Code.

Ceylon cinnamon

Cinnamon plant is native to Sri Lanka. The botanical name of the cinnamon tree *Cinnamomum zeylanicum* is derived from Ceylon, the former name of the country. Cinnamon is known in trade as Ceylon cinnamon. In some countries name Ceylon or Sri Lanka denoting the country of origin/geographic identity is affixed as qualifying word to their common names they use for cinnamon. It may be to identify true cinnamon coming from Ceylon / Sri Lanka. Following are a few examples.

Belarusian	<i>Zejlonskaja karyca</i>
Chinese	<i>Xi lan rou gui</i>
English	<i>Ceylon cinnamon</i>
Estonian	<i>Tseiloni kaneelippu</i>
French	Cannelle type <i>Ceylan</i> ,
Finnish	<i>Ceyloninkaneli</i>
German	<i>Ceylon zimt</i>
Hungarian	<i>Ceyloni fahej</i>
Japanese	<i>Seiron nikkei</i>
Korean	<i>Sillon-gyepi</i> , Sinamon,
Polish	<i>Cynamon cejloński</i>
Russian	<i>Tsejlonskaya koritsa</i>
Slovak	<i>Škorica cejlonská</i>
Thai	Ob choey <i>Srilanca</i>
Turkish	<i>Seylan tarçını</i>
Vietnamese	Que <i>Srilanca</i>

Cinnamon (Sinhala: *kurundu*) tree is reported to have originated in the central hills of Sri Lanka (Ceylon) where several species of wild cinnamon occur sporadically in places such as Kandy, Matale, Belihull Oya, Haputale and the Sinharaja forest range. Toponymical evidences as well as the archaeological and historical findings prove that cinnamon grew in North and North Central provinces during period Aryan settlers established the Anuradhapura kingdom.

Ceylon cinnamon introduced to other countries

Ceylon cinnamon was introduced into many islands in the tropics by the Portuguese, Dutch, British and French colonists. In 1798 cinnamon from Ceylon was cultivated in India by Murdock Brown then Superintendent of the British East India Company in Anjarkandy estate in Kannur District of Kerala. Cinnamon was introduced in Seychelles in 1772 by Pierre Poivre, French administrator of Mauritius and Reunion and to many other areas, notably Madagascar. Other

countries that cinnamon from Ceylon was cultivated are Brazil, Caribbean, Fiji, French Polynesia, Indonesia, Jamaica, Java, Malaysia, and Sumatra.

The superior quality of Ceylon cinnamon

Even though Ceylon cinnamon plants were introduced to other countries the chemical characteristics and other inherent qualities of cinnamon grown in Sri Lanka are superior to cinnamon produced in other countries. The quality of cinnamon grown in Ceylon owed its superiority to the soil and climatic conditions and also to the methods of harvesting and production. Sri Lanka is still the major producer supplying 90% of the world's cinnamon. Madagascar and Seychelles are the other two countries that export cinnamon. Ceylon cinnamon has acquired a long standing reputation in the international market due to its intrinsic, quality, colour, flavour aroma and taste.

Cinnamon belongs to the family Lauracea

The *Lauraceae* family is one of the groups of *Angiosperms* (Flowering plants).”The taxonomy of the *Lauraceae* is still not settled. Although not known with certainty the total number of species in the family, conservative estimates say about 3,000 to 3,500 species worldwide, distributed in 52 genera”. (<http://botanica.uniandes.edu.co/investigacion/lauraceae.htm>) According to *The Plant List* maintained with the collaboration of the Royal Botanic Gardens, Kew and Missouri Botanical Garden includes 1,064,035 scientific plant names of species rank. Of these 350,699 are accepted species names. Out of the 7,430 species names for the family *Lauraceae* recorded in *The Plant List* only 2,747 are accepted and 2,498 are synonyms. Lauraceae, or the Laurel family, contains 67 genera. (<http://www.theplantlist.org>)

The genus & species of cinnamon

The genus *Cinnamomum* Schaeffer, 1760 is a large genus having more than 250 species, distributed in south and south-east Asia, China and Australia. The genus *Cinnamomum*, (cinnamon) is one of the species belonging to the *Lauraceae* (laurel family). Cinnamon and Cassia are the two oldest known spices of the genus *Cinnamomum* used by mankind and are the only commercially important ones. Cinnamon (*Cinnamomum zeylanicum* Blume) is the “true cinnamon” of commerce. Other cassia species, sometimes called “bastard cinnamon” is obtained from various sources like Chinese cassia (*Cinnamomum cassia* syn. *Cinnamomum aromaticum*) Indonesian cassia/Padang cassia or korintje (*Cinnamomum burmanii*), Saigon cassia or Vietnam cassia (*Cinnamomum cassia* or earlier identified as (*Cinnamomum loureirii*) and Indian cassia (*Cinnamomum tamala*). All these varieties are commonly known in trade as ‘Cassia’

Binomial nomenclature.

Binomial nomenclature is the system of giving each plant a unique name consisting of two parts. The first is the generic name that designates the genus and the second a specific epithet which is a qualifier to identify the species. The *species* is actually a subset of the *genus*.

In 1620 Caspar Bauhin in his *Pinax Theatri botanici* 1623 introduced the genus and species concept which was later refined by Carolus Linnaeus. The binomial system gives a single name

to each individual kind of plant. Linnaeus described every *species* he knew using a binomial and a concise description in *Species Plantarum* published in 1753.

International Code

The International Code of Nomenclature for algae, fungi, and plants (ICN) 2011 is the new name given to the International Code of Botanical Nomenclature (ICBN) agreed by the botanists around the world in 1930.

The first attempt at developing an international code for naming plants was made at the meeting held Paris in 1867. In 1930, taxonomists finally agreed on a single International Code of Botanical Nomenclature (ICBN). This Code is revised every 6 years and the name of the code was changed as ICN at the International Botanical Congress held in Melbourne in July 2011. The ICN can only be changed by an International Botanical Congress (IBC)

If two or more names have been given to the same plant group, the older name would be the correct name. The starting date of botanical nomenclature for purposes of priority is 1 May 1753, the first publication date of *Species Plantarum* by Linnaeus.

The priority principle states that only the first name validly and legitimately published for a particular taxonomic group is the correct one. In determining priority, the date that matters is the date on which the material was actually mailed to other institutions; this is not always the same as the year on the cover of a book or journal.

Botanical name of Ceylon cinnamon

Botanical names for plants were developed to identify individual plants scientifically because there were many different common names given to one particular plant. It is also reliable to identify a plant by its botanical name, rather than by its common name. Sometimes there can be multiple common names given to a plant. Further common names vary from country to country and language to language.

Cinnamomum zeylanicum is the botanical name of Ceylon cinnamon which refers to the cultivated specific species of cinnamon indigenous to Sri Lanka (Ceylon). Since 1666 several botanists have identified and named this plant from time to time. Out of them three have named this plant by the botanical name *Cinnamomum zeylanicum*. They were Jacob Breyne (1637-1697) German merchant and naturalist was the first to name this plant as *Cinnamomum zeylanicum* Breyne in 1666; Carl Ludwig Blume (1789-1862) German – Dutch botanist, Director of State Herbarium at Leiden and Second Director of Agriculture of the Botanic Garden at Bogor in Java (1823-1826) named this plant as *Cinnamomum zeylanicum* Blume in 1825, and Christian Gotterfried Danic von Esenbeck Nees (1776-1858) German Botanist, physician, zoologist and natural philosopher named this plant as *Cinnamomum zeylanicum* Nees in 1831.

Carolus Linnaeus (1707-1778) regarded as the father of taxonomy, who developed the modern System of Nomenclature, named the cinnamon plant as *Laurus cinnamomum* L. in 1753. There he classified cinnamon plant with the genus *Laurus* and gave *cinnamomum* as the species epithet. Gustav Karl Wilhelm Hermann Karsten, a German botanist and geologist named the cinnamon plant as *Cinnamomum cinnamomum* H.Karst in 1881.

Theodore Dru Alison Cockerell (1866-1948) was an American zoologist later studied botany and author of more than 2200 articles in scientific publications named the cinnamon plant as *Cinnamomum cinnamomum* Cockerell in 1892.

Two Bohemian botanists, Friedrich von Berchtold (1781–1876) a practicing physician with a strong interest in botany & natural history and Jan Svatopluk Presl (1791–1849) a professor of Natural Science at the University of Prague co-authored a number of botanical publications in Czech Language. In the second volume of the work titled “*O Prirozenosti Rostlin aneb Rostlinár* Prague: Jos. Krause,1823-1835” while naming cinnamon plant transferred the *Laurus* to genus *Cinnamomum* in the name given by Linnaeus in Species Plantarum (1753). On transfer of plant group from *Laurus* to *Cinnamomum*, gave a new species name ‘*verum*’ (Czech‘prawy’) *Skoricownjk prawy*. The species epithet *verum* denotes ‘true’. Further, in botanical nomenclature it is not possible to use the botanical name as *Cinnamomum cinnamomum* (L) J.Presl. That is why a new epithet name (Czech‘prawy’, Latin ‘*verum*’) was given to this pant.

Cinnamomum zeylanicum

Ceylon cinnamon is one of the earliest spices known to mankind and traded in the world. Since 1666 *Cinnamomum zeylanicum* Breyne was the botanical name used and accepted by many, especially botanists, consumers and traders. In 1753 Linnaeus in his *Species Plantarum* coined the binomial *Laurus cinnamomum* L. The botanical name coined by Linnaeus was not valid because of taxonomic reasons. The name given by Breyne was not valid as it was prior to the formal starting date of plant nomenclature. The first botanist known to have used the binomial *Cinnamomum zeylanicum* after 1753 was Carl Ludwig Blume in 1825. This was the botanical name used by many scientists, scholars, consumers, growers and traders continuously for nearly for three centuries until this was reported in Taxonomic Literature 1:236 published in 1976. Taxonomic Literature “a selective guide to botanical publications and collections with dates, commentaries and types.” If we do a Literature Survey of Scientific Literature, Medical Literature or Trade Literature we find the botanical name *Cinnamomum zeylanicum* as the prominent name used by them for Ceylon cinnamon. Even now the Sri Lankans use this botanical name in all their day to day trade transactions.

It was in 1965 that A.J.G.H.Kostermans first alerted botanists to the point that *Cinnamomum verum* J.Presl was an earlier name than *Cinnamomum zeylanicum* Blume. According to him that Blume’s *Bijdragen tot de flora van Nederlandsch Indië* Part.11 page 568 was not published until 24 January 1826. But according to the details available, the four fascicles namely 10.11.12 and 13 were issued between 7th Dec.1825 and -24th Jan 1826 . It is not proper to make a guess to say that fascicle 11 was not issued before January 1826. This type of conjecture is not allowed in the ICN in determining priority. According to the rules the valid date is the “date on which the material was actually mailed to other institutions, not even the date that appear on the cover of a book or journal”. Therefore, it is not possible to ascertain accurately the relevant information ie. “mailing date” after a lapse of nearly 139 years.

Blume’s *Brijdragen tot de flora van Netherlandsch Inde* was published in 17 parts between 1825-1827 and the pages and issue dates of fascicles are given below. These are not the ‘mailing dates’ as specified by the ICN regulation.

[1: 1-42. 15 Mar-31 May 1825; 2-9: 43-484. 12 Jun-7 Dec 1825; 10-13: 485-730. 7th Dec-24 Jan 1826; 14-15: 731-942. Jul-Dec 1826; 16-17: 943-1169. Oct 1826-Nov 1827.]

The publication *O Prirozenosti Rostlin aneb Rostlinár* which Kostermans has referred to was co-authored by two Bohemian botanists Friedrich von Berchtold (1781–1876) and Jan Svatopluk Presl (1791–1849) written in Czech Language. According to the copy found in the library of Hunt Institute for Botanical Documentation bibliographic details are given below.

Berchtold, Friedrich von and Jan Svatopluk Presl. *O Prirozenosti Rostlin aneb Rostlinár* Prague: Jos. Krause, 1823–1835 (vol.1, 1823; vol. 2, [1823-]-1825; vol. 3,[1830]-1835)

Bibliographic note

“Bibliographic note recorded by the Hunt Institute Library states that *O Prirozenosti Rostlin aneb Rostlinár* was published in fascicles and collected into three volumes. Hunt Institute has the text from volumes 1 and 2 and the plates from all three volumes. The text of volume 1 is not paged continuously but has 13 different groups of pages. Volume 2 is paged continuously. Similarly, the plates from volume 1 are not numbered continuously, but those from the other two volumes are. There are 196 plates, which in this copy are all bound together in one volume separately from the text.”

Part Wrappers

“Original printed wrappers for pre-twentieth-century published works are rare as most were discarded when the pages they enclosed were being bound or rebound. However, they can provide critical information to scientists as well as to bibliographers, since the true publication date of a plant description might well be the date the pages it appears on were published, rather than the date on the title page added to the collected parts when they are brought together for binding.”

Hunt Institute has four part wrappers bound in with the volumes. At the front of copy of the text of volume 1, there is a part wrapper for fascicle no. 31, and at the front of copy of the text of volume 2, there is a part wrapper for fascicle no. 30. There are two more part wrappers (for fascicles 4 and 17) bound in with the plates. The part wrappers show which text pages and plates were distributed together in each of those fascicles”.

Date of publication and bibliographic information

It is obvious that there are discrepancies with regard to date of publication and also bibliographical details given above are inconsistent and incongruous.” Part wrapper for fascicle no. 31 is bound as the front cover of volume 1, but part wrapper for fascicle no 30 is at the front of copy of the text of volume 2. All the wrappers, including the wrapper for fascicle no 30 record that Friedrich Berchtold and Jan Svatopluk Presl [Bedrichem Wsemjrem Hrabetem Berchtoldem a Janem Swatoplukem Preslem] as co-authors. But there is a title page before page 1 of volume 2 text which gives only the name of Jan Svatopluk Presl as the author. Hunt Institute Library has only the text from volumes 1 and 2. Text of the volume 3 is not there, but posses plates from all the three volumes. All the three volumes are published during 1823–1835”. Based on the information printed on wrappers the publication dates are vol. 1- 1823; vol. 2 -1825 and vol. 3-1835 respectively.

According to TL/2 “*Prir. Rostlin* vol. 2 has pages 1-508 and they were published between 1823-1825. So it seems likely that p. 37 was published in 1823 or 1824”. But the copy of volume 2 in the Hunt Institute Library the part wrapper and the title page found in Vol.2, the date of publication is clearly printed as 1825 (in Roman numerals (MDCCCXXV) This date cannot be considered as the mailing date or date of publication according to ICN regulations. The exact

date the vol. 2 distributed to libraries was not known or even the date Hunt Institute acquired this copy of this work is also not given.

Valid mailing date

According to the ICN in determining priority, the valid date is the date on which the material was actually mailed to other institutions; this is not always the same as the year on the cover of a book or journal. It is not possible to ascertain relevant information ie. “mailing date” of *O Prirozenosti Rostlin aneb Rostlinár* Vol. 2 after a lapse of 139 years. It is true that both these works were published in the year 1825, but it is doubtful to decide the valid date without accurate facts.

Recommendation 45B

Moreover, according to Recommendation 45B.1 of the ICN, authors should indicate precisely the dates of publication of their works. In a work appearing in parts, the last-published sheet of the volume should indicate the precise dates on which the different fascicles or parts of the volume were published as well as the number of pages and plates in each. These rules were enacted at a later date. As per rules of the Code, it is difficult to ascertain the valid date of both these publications. ie. *Brijdragen tot de flora van Nederlandsch Inde* and *O Prirozenosti Rostlin aneb Rostlinár*. This type of mistakes can occur with regard to pre-twentieth-century published works .

Dr.A.J.G.H.Kostermans was respected as a world authority on Lauracea, none of Sri Lankan botanists objected to this disclosure at that time. A similar thing happened in the botanical name of Sri Lanka’s national tree (*Na gasa*). It was botanically classified as *Mesua ferrea* L. a species of the Calophyllaceae family (*Sp. Pl. (1753)515; (ed. 2 1: 734, 1762)*) and known for a long time. But in 1976 Kostermans pointed out that there is an earlier name *Mesua nagassarium* Burm. f., *Fl. Ind. 121 (1768)71*. Local scientists accepted this new name and changed the name to *Mesua nagassarium* (Burm.f.) Kosterm. *J.Sci.Biol Sci 12(1976)*. This name even appeared on one of the Sri Lankan currency notes printed in the 1980s. Now, *Mesua nagassarium* (Burm.f.) Kosterm. is treated as a synonym. Kostermans and Gunatilleke et al. classify *Mesua ferrea* in the *Clusiaceae* family, while in the AgroForestryTree Database it is allocated to the *Guttiferae* family.

Established botanical name

Sri Lankan cinnamon industry stake holders are continuously using the established botanical name *Cinnamomum zeylanicum* Blume. Even today this botanical name is widely used in medical literature and the spice trade.

The Spice Council Sri Lanka (TSC), The Spices & Allied Products Producers' & Traders' Association (SAPPTA) and all the stake holders of the cinnamon Industry of Sri Lanka came to know about the ICN decision only in 2006. That is when India proposed to change the botanical name in the ISO standard 6539:1997 at the periodic revision of this standard by the ISO Technical Committee 34/ Sub Committee 7 (ISO/TC34/SC7) on Culinary Herbs and Condiments. At this committee Sri Lankan delegate argued and convinced the delegates of member countries to retain the botanical name *Cinnamomum zeylanicum* Blume in the above standard pointing out the economic importance of it to the country and to avoid disadvantageous

nomenclatural change. Now, in the revised ISO 6539:2014 standard for Cinnamon continue the use of botanical name *Cinnamomum zeylanicum* Blume.

Nomenclatural stability

Cinnamomum zeylanicum Blume was accepted by many. It is the botanical name used in the international trade and commerce. ISO Standard for Cinnamon ISO 6539:1983 and subsequent editions ISO 6539:1997 and ISO 6539:2014 have used the botanical name *Cinnamomum zeylanicum* Blume. Sri Lanka National Standards issued by Bureau of Ceylon Standards (BCS) and later Sri Lanka Standards Institution(SLSI) from 1969 use the botanical name *Cinnamomum zeylanicum* Blume for Ceylon cinnamon in the Sri Lanka Standards (SLS 249), (SLS 81), (CS:184) and (CS:185). The National-Plant-Quarantine Services centre (NPQS) of the Department of Agriculture in Sri Lanka has accepted *Cinnamomum zeylanicum* Blume as the botanical name for Ceylon Cinnamon. The Sri Lanka Export Development Board (SLEDB) since its inception in 1979 has been using *Cinnamomum zeylanicum* Blume as the botanical name for Ceylon Cinnamon.

World Customs Organisation (WCO) has always accepted *Cinnamomum zeylanicum* Blume as the botanical name for Ceylon Cinnamon in the Harmonised System Code (H.S.Code). Even after the bifurcation of Cinnamon from Cassia in the H.S. Code, the botanical name *Cinnamomum zeylanicum* Blume remains in the new subheading for Ceylon cinnamon. [HS Code 090611: cinnamon (*Cinnamomum zeylanicum* Blume) HS Classifications]

Product Factsheet of the CBI (Centre for the Promotion of Imports from developing countries) Agency of the Netherlands Ministry of Foreign Affairs use the botanical name *Cinnamomum zeylanicum* Blume. [www.cbi.eu]

CBI Product Factsheet: Cinnamon in the United Kingdom ‘Practical market insights into your product’ also use the botanical name *Cinnamomum zeylanicum* Blume.

European Spice Association (ESA) List of Culinary Herbs and Spices use the botanical name *Cinnamomum zeylanicum* Blume.

Guidebook for Export to Japan (Food Articles) Japan External Trade Organization (JETRO) use botanical name *Cinnamomum zeylanicum* Blume.

[ukreexport.gov.ua/i/imgsupload/file/guidebook_food_spices..]

Norwegian Customs Tariff - Including the Statistical Nomenclature -2013 use the botanical name Cinnamon (*Cinnamomum zeylanicum* Blume) [www.toll.no/upload/.../1/Norway-English-CustomsTariff-2013]

Nomen conservandum

For this type of nomenclatural problems there is provision in the ICN. The Regulation 14 of the Code provides for conservation of such names. Latin *Nomen conservandum* is a scientific name meaning "a name to be conserved" used by ICN for specific nomenclatural protection. In taxonomy, it is a name, otherwise unacceptable under the rules of nomenclature, which is made valid using specified procedures to avoid undesirable effects of strict enforcement of priority principle, and achieve stability in nomenclature problems. When conserved under the Article 14

of the Code that name is ruled as legitimate and with precedence over other specified names even though it may have been illegitimate when published or lack priority.

The XIII International Botanical Congress (IBC) held in Sydney Australia, 1981 voted to allow conservation of names in use for species of major economic importance and in certain other circumstances. At the XV International Botanical Congress (IBC) held in Tokyo power of such committees was extended further, so that it is no longer necessary to prove major economic importance to have name of a species conserved, and the name (at any rank) that might cause nomenclatural instability, can now be proposed for rejection.

Nomenclatural Stability

Botanical names are subject to change due to taxonomic opinion and findings of botanists. However name changes of plants go beyond botanical nomenclature. It affects all sciences, industries, trade and consumers having to do with plants. Name changes should not be considered merely based on improperly published works that leads to nomenclatural controversy and de-stability. Therefore it is of great importance to maintain the botanical name *Cinnamomum zeylanicum* Blume that had been in use for more than three centuries to avoid confusion among traders and consumers world-wide, especially at a time when the Government Sri Lanka has registered the brand name “Pure Ceylon Cinnamon” for cinnamon produced in Sri Lanka.

Remedial Action

When this impending danger to the economy of the country was brought to the notice of Hon. Hemakumara Nanayakkara, then Minister of Agriculture immediately appointed a committee headed by Dr. D.S.A. Wijesundara, Director General of National Botanical Gardens on 6th May 2007 to take appropriate action.

Agricultural and Forestry Section (Section B) President Dr. H.A. Sumanasena and the committee of the Sri Lanka Association for the Advancement of Science (2007) along with the Department of National Botanic Gardens and the Department of Export Agriculture organized a one day workshop which was held on 11th July 2007 under the title of “Taxonomy of Cinnamon and its implications for Trade” at the Herbarium of the Royal Botanical Gardens, Peradeniya. The participants were senior plant taxonomists from the Royal Botanic Gardens and local universities, crop researchers and extension experts actively engaged on cinnamon from the Department of Export Agriculture, representatives from the Department of Agriculture, National-Plant-Quarantine Services Centre (NPQS), Plant Genetic Resources Center (PGRC), and representatives of the Cinnamon industry i.e. The Spice Council (TSC), Spices & Allied Products Producers' & Traders' Association (SAPPTA), Ceylon Cinnamon Association (CCA) and Spice Testing Laboratories.

At this workshop it was concluded that botanists in our universities and the botanical gardens to work together for early submission of papers for conservation of *Cinnamomum zeylanicum* Blume as the botanical name of cinnamon to “TAXON” the journal of the International Association for Plant Taxonomy (IAPT). To submit an appeal to the International Botanical

Congress to conserve the established name *Cinnamomum zeylanicum* Blume as the botanical name for Ceylon cinnamon.

Further, it was agreed to use *Cinnamomum zeylanicum* Blume as the botanical name for Ceylon Cinnamon in all the publications as frequent use of botanical name *Cinnamomum zeylanicum* Blume for Sri Lankan Cinnamon would strengthen the case for conserving the name *Cinnamomum zeylanicum* Blume at a future Nomenclatural session of the International Botanical Congress.

Now there is a separate Ministry for Minor Export Crops Promotion including cinnamon. The Ministry has yet to take necessary action to get the botanical name *Cinnamomum zeylanicum* Blume conserved as Dr. D.S.A. Wijesundara, Director General of Botanical Gardens suggested at the National Workshop held on 11th July 2007.

Sri Lanka's second global brand 'Ceylon Cinnamon' and 'Ceylon Cinnamon' logo were ceremonially launched at the Presidential Export Award ceremony held in June 2011. Export Development Board (EDB) has now received official certification in Peru, Columbia, EU and the US. The Government of Sri Lanka plans to increase the cinnamon exports to a target of one billion US dollars by 2015.

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