CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

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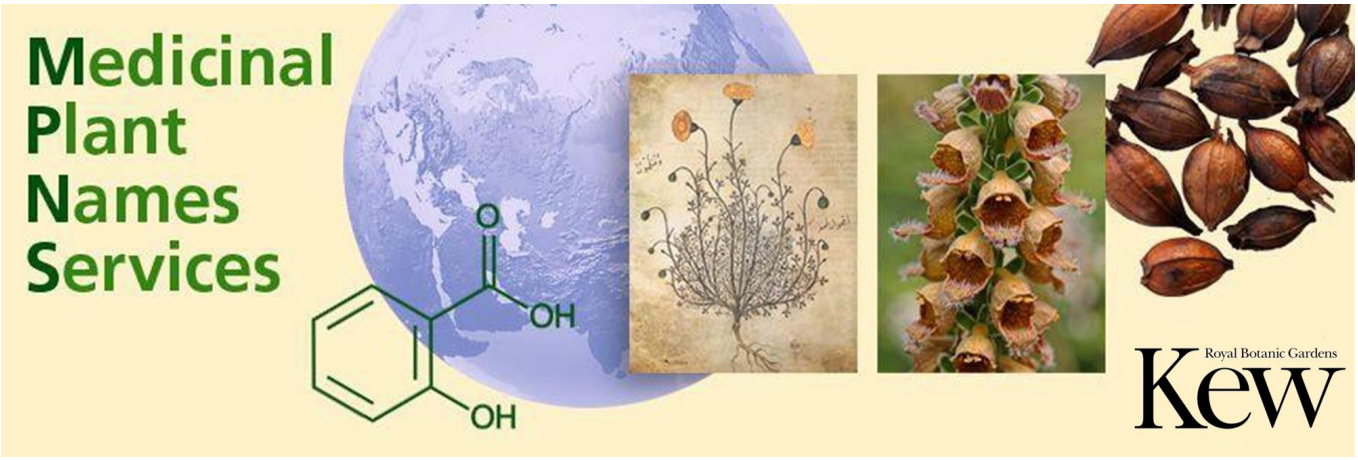
Johannesburg (South Africa), 24 September – 5 October 2016

A NEW ONLINE RESOURCE FOR CITES MEDICINAL PLANT LISTINGS – KEW'S MEDICINAL PLANT NAMES SERVICES

This document has been submitted by the United Kingdom of Great Britain and Northern Ireland, in relation to agenda item 81.1 on *Standard nomenclature: Report of the Animals and Plants Committees*[*].

[*] *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*



Enabling effective communication in health, regulation and research.

What is Kew's Medicinal Plant Names Services (MPNS)?

- A global resource of the plant names used for 14,000 of the most widely used and traded medicinal plants, from globally diverse health traditions. Common, drug, pharmaceutical (pharmacopoeia), pin yin, trade and scientific names from regulations and relevant literature are linked to an up to date nomenclature and taxonomy from Kew's botanical resources.
- A suite of Information Services, including an online portal (accessed via www.kew.org/mpns), which enables many professions working with medicinal plants, in regulation, health and research, to access information about medicinal plants and plant products.
- You can see examples on how to use this free online names service and portal at the end of this document.

Why is MPNS needed?

Medicinal plants are used and traded globally and are known by different names in different communities, and health traditions. The same name can also be applied to different species. The result is that organisations and individuals often use different names for the same plant, but can also use the same name for different plants. This can impede professionals who need to access reliable information about medicinal plants and communicate accurately and effectively about them. To find all the information published about a particular plant, and to ensure that you are checking data correctly, you will need to know all the possible names that have been used, and any possible ambiguities or other confusions that may arise.

Particular relevance to CITES?

The MPNS resource is freely available via the MPNS portal, this can assist CITES parties with the day-to-day work of CITES, and may be suitable as the standard reference for Medicinal Plants in the future.

- You can search the MPNS portal using any category of name (common, trade, scientific, etc.) and it will find:
    - all the plants that the name has been used for, e.g. a search using the term 'ginseng' reveals that it can apply to herbal substances derived from 12 different plants.
    - for each plant searched, the current accepted name; its scientific synonyms (any of these might be on the CITES application or permit); its non-scientific names from medicinal regulations and literature, including pharmaceutical (pharmacopoeia) names which are often Latinized and superficially resemble the proper technical scientific name.
    - up to date information. New versions of the resource are released onto the portal quarterly to reflect updates and changes in Kew's underlying taxonomy due to improved knowledge and to include names collected from new additional references. The resource is versioned and a summary of changes made between versions is available.

    See the appendix below for a full run-through of the portal features.

- The MPNS team also offer training including a basic introduction to plant names, and best practice when using them.

Kew's role?

Kew hosts and curates the International Plant Name Index (IPNI) (www.ipni.org), the World Checklist of Selected Plant Families (WCS) (www.kew.org/wcsp) and The Plant List (www.theplantlist.org). MPNS has built upon these existing plant name resources to create an authoritative database of medicinal plants and their names. The inclusion of non-scientific names (trade, pharmaceutical and common names in different languages) linked to the scientific names of the plants they refer to makes Kew's taxonomic information more accessible and relevant to a wider audience.

The MPNS resource is built by collecting scientific and non-scientific plant names as they are used in the relevant legislation and medicinal literature, including pharmacopoeias, monographs, ethnobotanical surveys, natural products research and regional works.

MPNS uses the scientific names in each reference to link the non-scientific names to a current and comprehensive taxonomy in Kew's existing taxonomic databases.

What does MPNS offer?

In addition to the free-to-use portal, MPNS can also provide additional novel information services but fees may apply. These include but are not limited to:

- **validation** and enrichment of plant name lists, suggesting corrections, and providing current accepted names and full synonymy
- **mapping** lists of plant names to those used by other organisations or publications
- **download** of versioned lists for use in client database system
- **machine to machine** services allowing other databases to access MPNS
- **training** in best practice when using or recording medicinal plant names or when constructing IT systems to contain such names

Recognition for MPNS by global health regulators

The Services that MPNS provide are enhancing the safety, quality and effectiveness of medicinal plant use, regulation and research. Evidence of this success has been the adoption of a "controlled vocabulary" from MPNS by the US, EU, and Japanese health regulators and the World Health Organisation. The vocabulary is a core component of a new International Organization for Standardization (ISO) data standard for all medicinal products globally. Find out more here:
http://www.kew.org/discover/blogs/kew-science/kew's-plant-names-services-adopted-global-health-regulators

Selected Publications

Allkin, R. (2006). Plant names as obstacles and solutions to accessing information about medicinal plants. In J. Barnes (ed.), Pharmacovigilance of Herbal Medicines: current state and future directions. *Drug Safety* 29(4):341-370.

Allkin, R. (2013). Communicating safely and effectively using plant names. In Traditional Medicines and Globalisation: the Future of Systems in Medicine. Journal of Ethnopharmacology Special Volume. Chapter 13. pp. 111 -125. Maven Press. ISBN 978-81-926243-0-3

ISO 11238:2012. Health Informatics: Identification of medicinal products -- Data elements & structures for the unique identification and exchange of regulated information on substances. Technical Committee ISO/TC 215, Health Informatics. ISO; 2012: 1 - 41

Paton, A., Allkin, R., Belyaeva, I., Dauncey, E., Govaerts, R., Edwards, S., Irving, J., Leon, C., Nic Lughadha, E. (2014). Plant name resources: building bridges and users. In: Botanists of the twenty first century: roles, challenges and opportunities. UNESCO International Conference, Paris, France, 2014. UNESCO; 2016: 207 – 216. Available at http://unesdoc.unesco.org/images/0024/002437/243791m.pdf

Rivera, D., Allkin, R., Obón, C., Alcaraz, F., Verpoorte, R., Heinrich, M. (2014). What is in a name? The need for accurate scientific nomenclature for plants. Journal of Ethnopharmacology 152, 393–402.

Project Partners and Collaborators

We work with many organisations and our partners including:

- Dr Uwe Schippmann and the IUCN Medicinal Plant Specialist Group http://www.iucn.org/ur/node/24663
- World Health Organisation, Uppsala Monitoring Centre http://www.who-umc.org/
- United States Food and Drug Administration http://www.fda.gov/
- United States Pharmacopoeia http://www.usp.org/
- European Medicines Agency http://www.ema.europa.eu/ema/
- European Scientific Cooperative on Phytotherapy http://escop.com/
- Medicines and Healthcare Products Regulatory Agency https://www.gov.uk/government/organisations/medicines-and-healthcare-products-regulatory-agency
- British Pharmacopoeia https://www.pharmacopoeia.com/
- British Herbal Medicine Association. http://bhma.info/

Further information

Visit the MPNS website for further information and to search the portal: www.kew.org/mpns

Email: MPNS@Kew.org

Royal Botanic Gardens Kew — Medicinal Plant Names Services

Enabling effective communication in health, regulation and research

Why is MPNS needed?

The global trade in medicinal plants is large and growing. The regulatory frameworks for safety, quality and efficacy of traditional medicines require **clear communication** about the plants involved. Similarly, it is critical for professionals working with these plants to be able to reliably retrieve and share information about them.

One Name can refer to several Plants

'Ginseng'

One Plant will have many Names

'Carduus marianus' 'cardo blanco' 'milk thistle' 'fructus silybi' 'Silybum marianum'

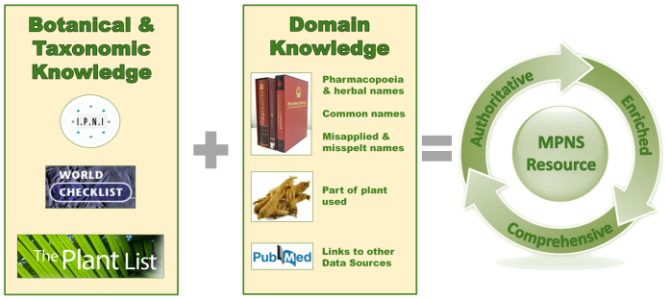
Names are used inconsistently between countries, communities and professions.

c.1.6 million scientific names for plants → c. 380,000 species worldwide → 60,000 species are known to be used medicinally → Millions of non-scientific names

+ 10,000 Scientific names for plants changed each year!!

Photo credits (left to right): Kew, Stanislav Doronenko, JMK, Lin Yu Lin.

The MPNS resource

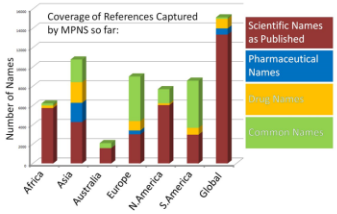


Support from the Wellcome Trust has enabled MPNS to build upon Kew's existing resources to create an authoritative database of medicinal plant names.

Coverage

Up-to-date taxonomy is linked to scientific, pharmaceutical, drug and common names as they are used in the relevant literature and legislation.

The inclusion of non-scientific names (trade, pharmaceutical and common names in many languages) makes Kew's taxonomic information more accessible and relevant to a wider audience.



14,000 Plant Species represented so far

Linked to:

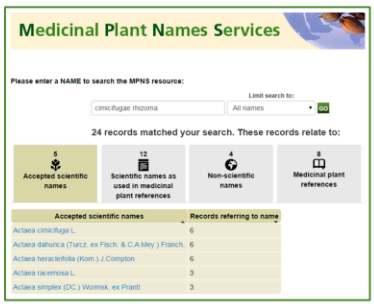
- **> 200,000** scientific names
- **> 40,000** non-scientific names

Services we offer

- **Harmonisation**
- **Vocabularies**
- **Validation**
- **Training**
- **Web Services**
- **Consultancies**

MPNS offers a range of services based on Kew's unique resources and the expertise of our staff. We work with health regulators, international agencies and professional organisations to improve their capacity to use plant names.

The MPNS portal



Results provide:

- accepted scientific names
- all scientific synonyms
- scientific and non scientific names as used in the literature
- links to other online resources

The MPNS resource can be searched using a freely accessible web portal:
http://mpns.kew.org/mpns-portal/
Data will be updated quarterly to include names from new references, resolve errors and to reflect advances in taxonomic knowledge.

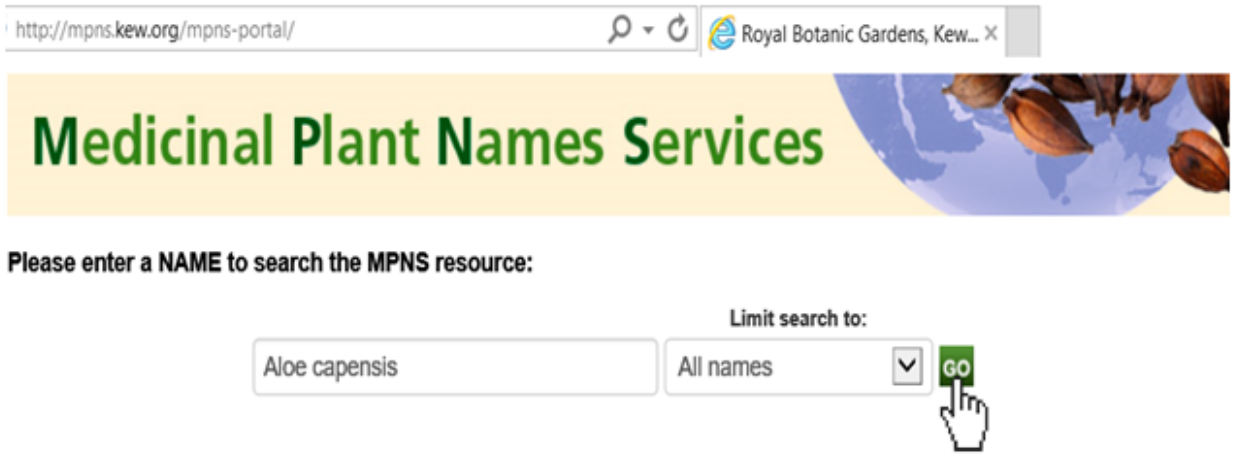
www.kew.org/MPNS MPNS@kew.org @MPNS_Kew

APPENDIX 1
Searching the MPNS Portal

Example 1: the misleading Latin name 'Aloe capensis'

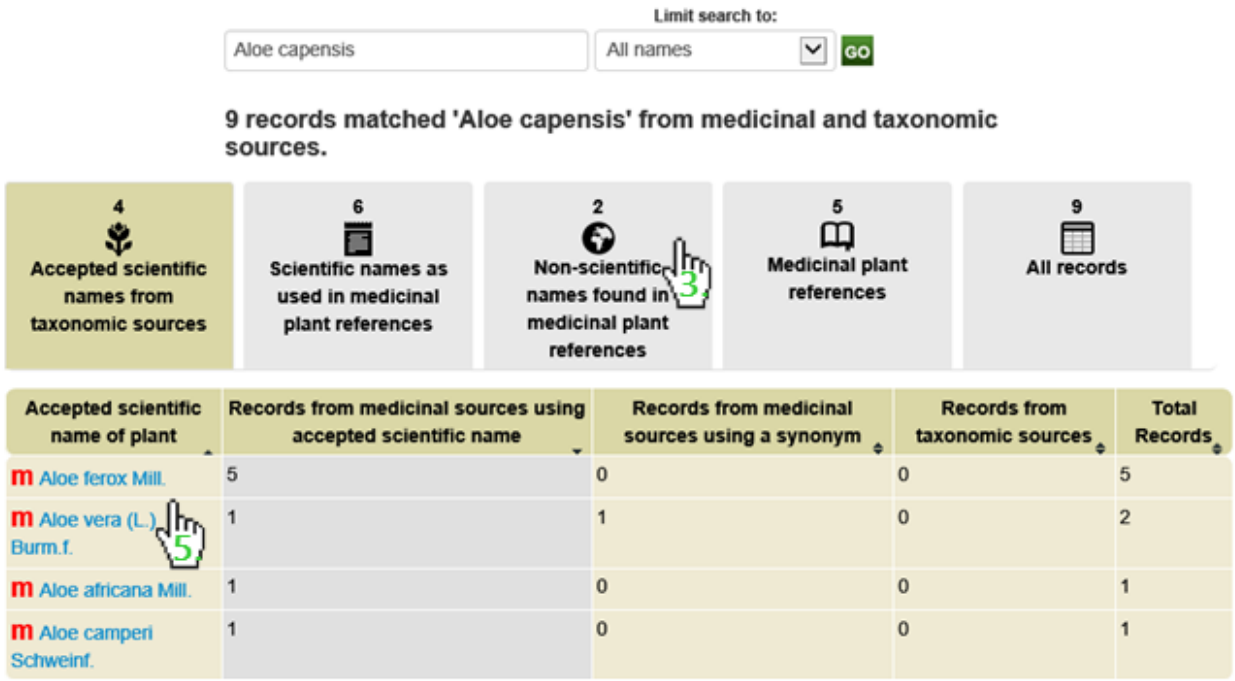
1. Enter a name into the search box and click 'GO'.

In this example, 'Aloe capensis' has been used. 'Aloe capensis' appeared on the list of contents for a product being imported into a country.



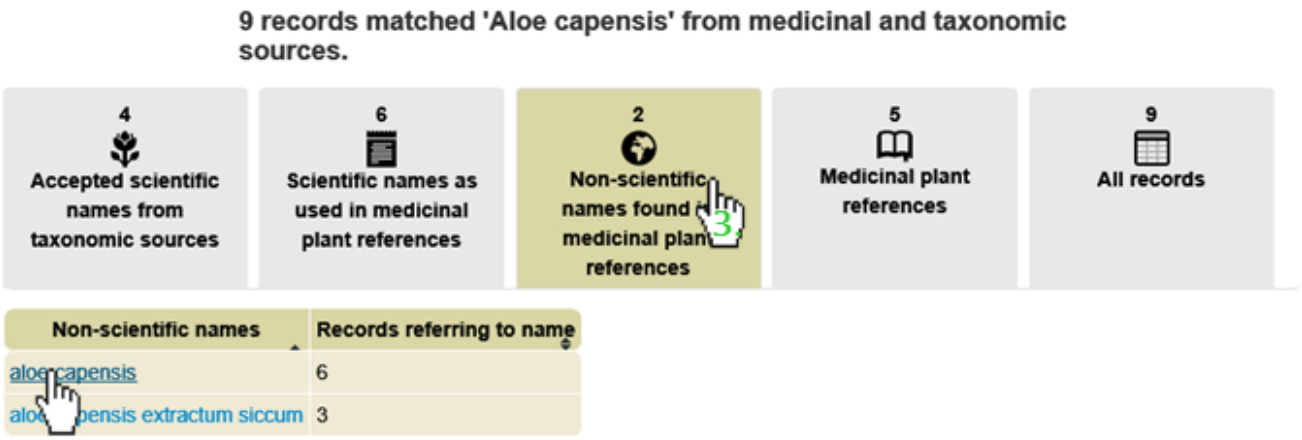
2. The results page lists the accepted scientific names that are linked to your search term.

In this case, there are 4 different plants associated with the name 'Aloe capensis'.
You may click on each of the scientific names in turn to find out more about that plant (see 5.).
Note: *Aloe capensis is not itself the accepted scientific name for any of these plants.*



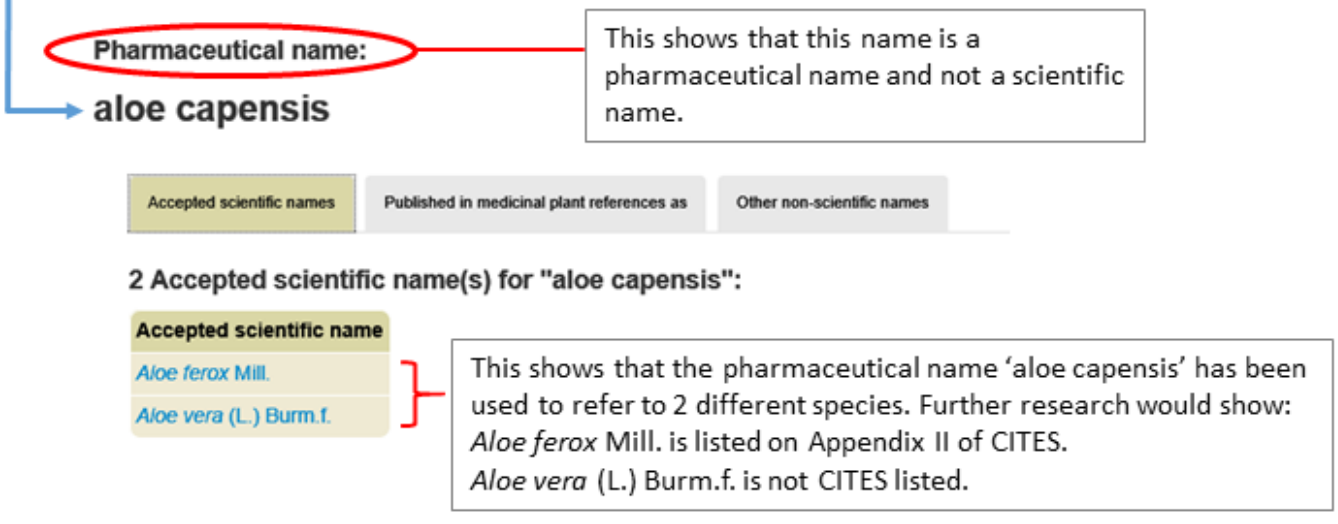
3. Click on the tab 'Non-Scientific names found in medicinal plant references'.

This lists two non-scientific names used in references that match the search term. This shows that although 'Aloe capensis' looks like a scientific name it is actually a non-scientific name that is used for several species of Aloe.



4. Click on the name 'aloe capensis'.

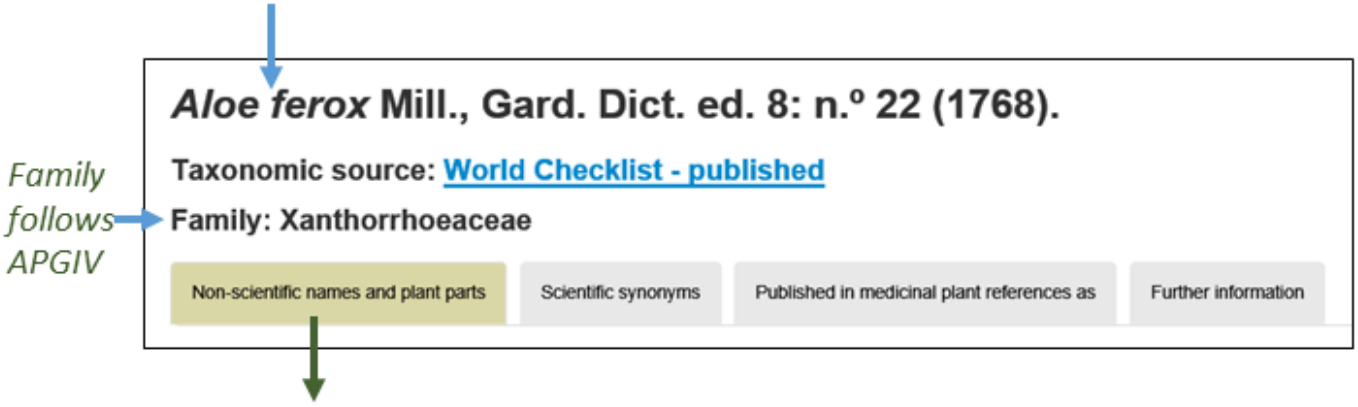
This shows that 'aloe capensis' is classed as a 'pharmaceutical name', which is the class of name used by some pharmacopoeias for herbal drugs and preparations. It has been used for two species of *Aloe*.



5. Click on Aloe ferox, either directly from the first results page (2.) or after exploring the non-scientific name tab (4.).

Here you will find the non-scientific and scientific names that are associated with *Aloe ferox* in medicinal plant legislation and other references, and in Kew's taxonomic resources.

Accepted scientific name for plant, including author and publication details



Family follows APGIV

default tab displays the more than 100 non-scientific names and the references that they have been collected from, as well as the plant part used and trade form

Scientific synonyms → *displays all the 17 alternative scientific names that have been published for this plant but are now considered to be synonyms of the accepted name*

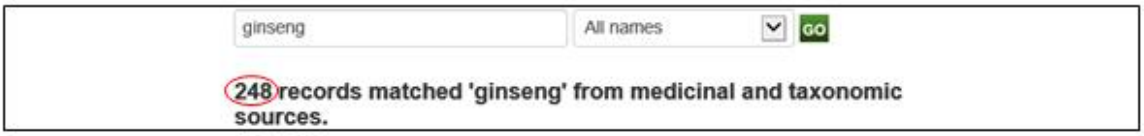
Published in medicinal plant references as → *lists the scientific names exactly as they appear in each reference including errors and differences in abbreviation*

Further information → *enables you to search other resources using either:*
(i) the accepted scientific name alone, or
(ii) the accepted name and all the synonyms

Example 2: the ambiguous non-scientific name 'ginseng'

1. Enter a name into the search box and click 'GO'.
In this example the name 'ginseng' is used....

2. The results screen shows that 248 records have matched the search term.
The default tab lists the accepted scientific names from Kew's taxonomic resources that MPNS has linked to the search term. In this case there are 13 accepted names, showing that the name 'ginseng' is ambiguous as it has been used to refer to so many species.



13 Accepted scientific names from taxonomic sources	34 Scientific names as used in medicinal plant references	117 Non-scientific names found in medicinal plant references	41 Medicinal plant references	248 All records

Accepted scientific name of plant	Records from medicinal sources using accepted scientific name	Records from medicinal sources using a synonym	Records from taxonomic sources	Total Records
m Panax ginseng C.A.Mey.	178	0	5	183
m Panax quinquefolius L.	23	1	1	25
m Eleutherococcus senticosus (Rupr. & Maxim.) Maxim.	11	0	0	11
m Withania somnifera (L.) Dunal	4	0	0	4
m Hebanthe eriantha (Poir.) Pedersen	3	3	0	6
m Pseudostellaria heterophylla (Miq.) Pax	2	0	0	2
m Panax japonicus (T.Nees) C.A.Mey.	1	2	5	8
m Gynostemma pentaphyllum (Thunb.) Makino	1	0	0	1
m Panax pseudoginseng Wall.	1	0	0	1
m Panax trifolius L.	1	0	1	2
m Panax bipinnatifidus Seem.	0	2	0	2
m Panax bipinnatifidus var. bipinnatifidus	0	2	0	2
m Panax notoginseng (Burkill) F.H.Chen	0	1	0	1

3. From the results page you can (a) explore the results further by clicking on the tabs (see 4.), or (b) click on an accepted scientific name to find out more information about a particular plant (see 6.).

4. Clicking on the 'Non-scientific names tab' displays all 117 names in the MPNS resource that contain the term 'ginseng', highlighting the possibility for confusion this term presents.

Non-scientific names	Records referring to name
amazonische ginseng	1
american ginseng	7
american white ginseng	1
amerikanischer ginseng	1
amerikanne ginseng	1
asian ginseng	4
bamboo ginseng	1
blue ginseng	1
brazilian ginseng	1
canadian ginseng	1

5. If you scroll down and click on the name 'ginseng' you are taken to the details page for this name. This shows that 4 species are referred to using the name 'ginseng' on its own.
(Full details of how this name appeared in the publication and how it has been linked to Kew's taxonomic sources can be found by clicking on the 'Published in medicinal plant references' tab.)

Non-scientific name:

ginseng

4 Accepted scientific name(s) for "ginseng":

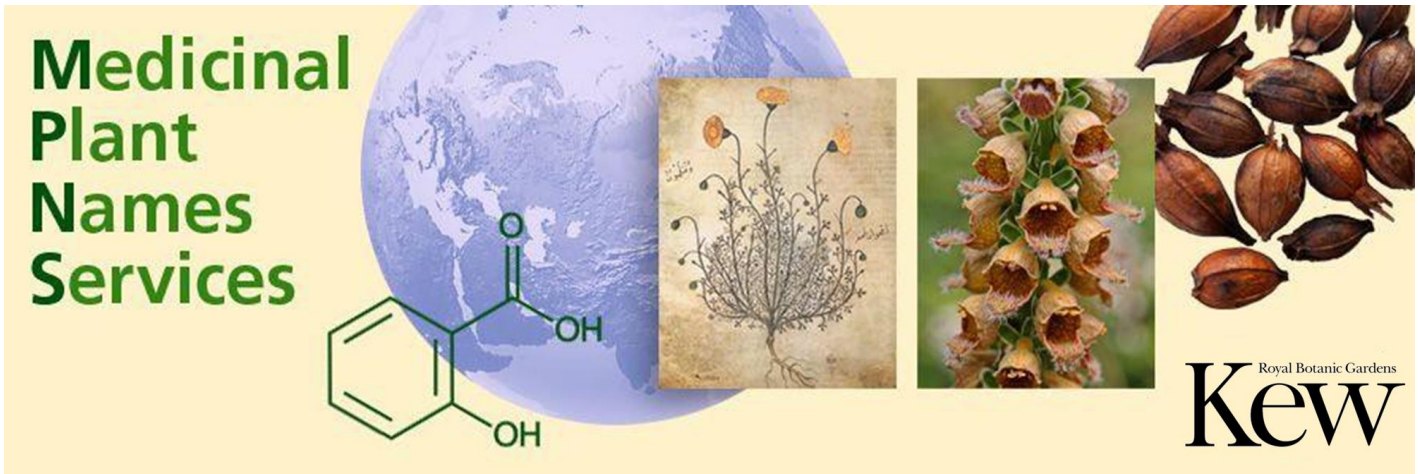
Accepted scientific name
Panax ginseng C.A.Mey.
Panax pseudoginseng Wall.
Panax quinquefolius L.
Eleutherococcus senticosus (Rupr. & Maxim.) Maxim.

6. Further information on each species, including all scientific synonyms, can be found by clicking on an accepted name (see 'aloe capensis' example for further details).

At present, CITES status is not shown, but it may be possible for future versions of the MPNS portal to display this information and/or link to other resources such as Species+. This would show that:

- *Panax ginseng* C.A.Mey is listed on Appendix II (Only the population of the Russian Federation; no other population is included in the Appendices.)
- *Panax quinquefolius* L. is listed on Appendix II.
- *Panax pseudoginseng* Wall. and *Eleutherococcus senticosus* (Rupr. & Maxim.) Maxim. are not listed on CITES.

Further information

Visit the MPNS website for further information and to search the portal: www.kew.org/mpns

Email: MPNS@Kew.org