Kew’s Medicinal Plant Names Services

... their role in the safety and efficacy of plant-based medicines

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Outline

- Introduction to plant names
- Scientific plant names
  - Why use them?
  - Obstacles
- Medicinal Plant Names Services (MPNS)
  - Why Kew?
  - MPNS Resource
  - MPNS Services
Who Uses Medicinal Plant Names?

- Health regulators and legislators
- Researchers
- Publishers
- Manufacturers
- Buyers and distributors
- Growers and wild harvesters
- Customs officers and trade regulators
- Retailers
- Practitioners
- Associations
- Poisons Centres
- The Public
When do they use plant names?

- Communicate with others
  - Exchange information/learn from other people
  - Buy and sell
  - Publish research
  - Regulate – collection, movement, use
- Find information
  - Search literature
  - Mine data
- Predict plant traits
  - Find related plants/sharing evolutionary history
Categories of plant name

- Common – vernacular
- Pin yin – transliteration of traditional Chinese name used by practitioners
- Pharmaceutical – Latinised
- Drug – can be any of the above
- Trade – can be any of the above, changes along supply chain
- Scientific – botanical, Latinised

Any of these can be used for more than one plant AND for different plants by different people or publications
fang ji: refers to 2 herbal medicines

Aristolochia fangchi

Confusion led to ~105 cases of renal failure
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Cimicifugae Rhizoma</td>
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</tr>
<tr>
<td>Latin Scientific name(s) used in the pharmacopoeia</td>
<td>Actaea racemosa L. (Synonym: Cimicifuga racemosa (L.) Nutt.)</td>
<td>Cimicifuga foetida L. or C. heracleifolia Kom. or C. dahurica (Turcz.) Maxim.</td>
<td>Cimicifuga foetida L. or C. heracleifolia Kom. or C. dahurica (Turcz.) Maxim. or C. simplex (D.C.) Wormsk. ex Turcz.</td>
</tr>
<tr>
<td>Common and other name(s)</td>
<td>Black Cohosh</td>
<td>Largetrifoliolious Bugbane Rhizome Shengma (pin yin)</td>
<td>Cimicifuga Rhizome</td>
</tr>
<tr>
<td>Uses</td>
<td>Menopause, rheumatism</td>
<td>Headache, toothache, diarrhoea, measles, etc.</td>
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</tr>
</tbody>
</table>

Latin Scientific name(s) accepted by botanists for these **five** species:

<table>
<thead>
<tr>
<th>Latin Scientific name(s)</th>
<th>Accepted by botanists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actaea racemosa L.</td>
<td>✓</td>
</tr>
<tr>
<td>A. cimicifuga L.</td>
<td>✓</td>
</tr>
<tr>
<td>A. heracleifolia (Kom.) J.Compton</td>
<td>✓</td>
</tr>
<tr>
<td>A. dahurica (Turcz. ex Fisch. &amp; C.A.Mey.) Franch.</td>
<td>✓</td>
</tr>
<tr>
<td>A. simplex (D.C.) Wormsk. ex Prantl</td>
<td>✓</td>
</tr>
</tbody>
</table>
Need for accurate plant names

- Increasing awareness by regulators, scientists and others of the need to use accurate plant names
- Journals are requiring authors to check their plant names using one of the international databases
- ISO 19844 – Identification of Medicinal Products – uses a controlled vocabulary of names from MPNS
Why use scientific names?

International

Formally published according to the Code (ICN)

Meaning is fixed to a ‘Type’ specimen
Not straight forward

- c. 380,000 species of plant worldwide
- 1.6 million scientific names for those plants
- On average, 10 synonyms for each medicinal plant
- 10,000 changes published each year
Why Kew?

- Kew hosts and manages the major plant names and taxonomy databases
  - e.g. IPNI, World Checklist, The Plant List
- Created by and for taxonomists and botanists
- Non-scientific names are not included

- Kew’s Medicinal Plant Names Services:
  - Builds on these databases
  - Global resource – covering plants and their names from all regions
MPNS Aims to:

- overcome the challenges presented by multiple and ambiguous names for medicinal plants, thereby facilitating effective communication to improve the safety and quality of their research and use

- We have a broad definition of ‘plant based medicine’ including medicines, herbal preparations and food or dietary supplements
MPNS Resource

- Designed for the health, pharmaceutical, regulation and research communities
- Includes scientific, pharmaceutical, common, and trade names
- From pharmacopoeias, legislation, and other medicinal plant literature
- Mapped onto correctly spelt scientific name and current taxonomy
- Continuously added to and updated
MPNS Resource

- > 21,000 unique scientific names captured from c. 80 medicinal plant references
- > 13,500 are accepted names = SPECIES

Variable confidence in the taxonomy:
- 40% are in the World Checklist (gold standard)
- 50% are in the unpublished World Checklist
- 10% are in The Plant List

For these 13,500 plants:
- link to over 194,000 scientific names in Kew’s resources
- > 64,000 common names (incl. pin yin)
- >4,500 pharmaceutical names
Medicinal Plant Names Resource: authoritative, complete, enriched

Domain knowledge
- Pharmacopoeia /Herbal names
- Common names
- Misapplied & Misspelt names (who and where)
- Links to other data resources
  - Part of plant used

Medicinal Plant Names Services

International Plant Name Index (IPNI)
World Checklist Selected Families (WCS)
The Plant List (TPL)
Professional Services

- Online portal – enables individual searches
  - available via [www.kew.org/mpns](http://www.kew.org/mpns)
- Validation – clients’ lists are verified and enriched
- Harmonisation – map multiple lists
- Controlled vocabularies – tailored datasets, e.g. by region or reference; ISO for medicinal products
- Machine to machine (API) – clients’ systems will access MPNS for updates
- Consultancies and Training
MPNS Team