Les plantes médicinales présentes en Polynésie française : quelles sont-elles, d’où viennent-elles, …où allons nous ?

The medicinal plants present in French Polynesia: their origin, their identity ...and their future

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Questions

- How many species are traditionally and/or currently used as medicinal plants in French Polynesia?
- How many species with documented medicinal uses/properties are present in French Polynesia?
- What are their biogeographical status: native, endemic, Polynesian (ancient) introductions, European (modern) introductions?
- What are their conservation status in French Polynesia: common, rare, threatened and/or legally protected species?
A literature review

- technical report in 2004 (slightly updated in 2006),
- based on ca. 70 publications (books, scientific papers) in botany, ethnobotany and ethnopharmacology,
- published between 1773 and 2004,
- available in the main research institutions and libraries in Tahiti.
- A taxonomical (valid scientific names), ecological and conservation approach
Some major references for French Polynesia

- **S. Parkinson (1773)** “Plants of Use for Food, Medecine & c. in Otahiete”
- **E. Jardin (1855)** “Essai sur l’histoire naturelle de l’archipel de Mendana ou des Marquises”
- **J. Nadeaud (1864)** “Plantes usuelles des Tahitiens”
- **T. Henry (1928)** “Ancient Tahiti”
- **P. Pétard (1960)** “Plantes utiles de Polynésie. Ra’au Tahiti”
- **F. Grépin & M. Grépin (1984)** “La Médecine Tahitienne Traditionnelle”
- **Service de la Culture (1998)** “Pharmacopée tahitienne”
Main results

- 1723 citations of species used as medicinal plants
- ca. 540 vascular plants present in French Polynesia have documented medicinal uses/properties
- 140-160 identified taxa are traditionally and/or currently used in French Polynesia

- 311 European introductions
- 72 Polynesian introductions
- 156 native species, including 36 endemics
The increased interest on medicinal plants in French Polynesia and the Pacific region

Cumulative number of publications over time

Years

0 10 20 30 40 50 60 70

Which species are the most well-known?

Most frequently cited species (> 10 publications)

Scientific name

Aleurites moluccana
Morinda citrifolia
Hibiscus tiliaceus
Artocarpus altilis
Calophyllum inophyllum
Syzygium malaccense
Inocarpus fagifer
Psidium guajava
The Spesia populnea
Cordyline fruticosa
Zingiber zerumbet
Cocos nucifera
Saccharum officinarum
Spondias cytherea
Ricinus communis
Solanum americanum
Achyranthes aspera
Casuarina equisetifolia
Hibiscus rosa-sinensis
Pandanus tectorius
The top 10

- *Aleurites moluccana* (candlenut tree)
- *Morinda citrifolia* (noni)
- *Hibiscus tiliaceus* (beach hibiscus)
- *Piper methysticum* (kava)
- *Artocarpus altilis* (breadfruit tree)
- *Calophyllum inophyllum* (tamanu)
- *Syzygium malaccense* (Malay apple)
- *Cordyline fruticosa* (ti plant)
- *Inocarpus fagifer* (Tahitian chesnut)
- *Thespesia populnea* (Pacific rosewood)
What are they?

Biological types

- Ferns: 5%
- Angiosperms: 95%
Where are they from?

Biogeographical status

- European intro.: 58%
- Native: 22%
- Polynesian intro.: 13%
- Endemic: 7%
The special case of ferns

Biogeographical status of medicinal ferns

Native
93%

European intro.
7%
Alien *versus* native species

Proportion of species used as medicinal plants according to their biogeographical status

<table>
<thead>
<tr>
<th>Species number</th>
<th>Endemic</th>
<th>Native</th>
<th>European intro.</th>
<th>Polynesian intro.</th>
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- **Endemic**: 6%
- **Native**: 36%
- **European intro.**: 78%
- **Polynesian intro.**: 72%

*Total number of species in French Polynesia*
*Number of medicinal plants*
How common are the endemic species?

Conservation status (IUCN criteria)

67% Rare, Vulnerable or Endangered

33% Low Risk

18 of the 36 endemic medicinal plants are threatened!
Examples of endemic medicinal plants on the verge of extinction

- *Ochrosia tahitensis* (Apocynaceae) in Tahiti (Society Is.)
- *Santalum insulare* var. *margaretae* (Santalaceae) in Rapa (Austral Is.)
- *Rauvolfia sachetiae* (Apocynaceae) in Nuku Hiva (Marquesas)

Species legally protected since January 2006
Conclusions

- The great majority of medicinal plants in French Polynesia are human introductions.
- ca. 70% of the plants introduced by the first Polynesians have medicinal values.
- Less than 20% (156 of the ca. 900) of the native species in French Polynesia have documented medicinal properties or uses.
- A few number of endemic species are used as medicinal plants, some of them are already endangered.
Future prospects

- The native flora of French Polynesia: a huge potential for future research (taxonomy and phylogeny, ethnobotany and ethopharmacology, chemistry and biochemistry...)

- The sustainable use of natural resources is essential in small island ecosystems

- In situ and ex situ conservation is urgently needed for the threatened endemic plants used as medicinal plants