Access and Benefit Sharing
Key Points for Policy-Makers

THE BOTANICALS INDUSTRY

Sarah Laird and Rachel Wynberg
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WHAT ARE BOTANICALS?
Botanicals are plant-based products that are used as medicines or to promote health and well-being. All parts of plants are used including roots, bark, leaves, seeds and flowers.
Other names for these products include herbal medicines, dietary herbal supplements, phytomedicines, and phyotherapeutic agents.
Unlike pharmaceuticals, botanicals are not highly purified or chemically modified medicines and typically do not involve identification of active constituents and characterisation of biological activity.

MARKET TRENDS
Botanical medicine sectors vary by country, reflecting the medical, scientific, cultural, legal and economic context from which they emerge. This sector varies more than most – including size of companies and sales, products, extent of R&D, and regulatory frameworks.
To different degrees, botanicals are part of the larger global nutrition industry – which includes dietary supplements, natural and organic foods, natural personal care, household products, and functional foods.
There is a global trend towards acquisitions of smaller botanicals companies by large pharmaceutical, personal care, household product, and food companies. Remaining small companies in the sector tend to fill niches, which might include sustainable and fair trade products.

PRODUCTS
Increased consumer demand for quality products with proven safety, efficacy, purity and consistency has led manufacturing companies to seek branded ingredients with better documentation, and clinically proven health benefits.
Regional variations exist in products sold, but global trends influencing new product development include: demand for high value products to treat the problems of affluent, aging and high stress populations, as well as performance-enhancing products for sports and active lifestyles.
Spices and food-based products are increasingly sold as botanical products for their medicinal and wellness-enhancing qualities (e.g. cranberry, garlic, turmeric, oregano, cinnamon and ginger).
Some botanical medicines are single species, and others are species combinations. They are sold in many forms, including: tablets, capsules, powder, liquid extracts, softgels, gelcaps, or as ingredients in sports drinks, energy bars and other functional foods.

DEMAND FOR ACCESS TO RESOURCES
There is increased interest in novel ingredients and innovation continues to be important, but new species are largely introduced to the market by smaller companies.
Investments in research on safety, efficiency, quality, formulations and delivery systems and in packaging and marketing, will often provide greater returns than gaining access to novel ingredients through ABS agreements.
Greater government oversight of safety, efficacy, and quality means the introduction of new species is more expensive and time-consuming than previously. Long histories of traditional use are sometimes used as proof of the safety and efficacy of botanical products.
Patents are an increasing part of R&D and product development strategies.

DEMAND FOR TRADITIONAL KNOWLEDGE
Traditional knowledge remains important to companies for identifying new products, marketing, and acquiring regulatory approval.
Increased consumer interest in natural products and stories associated with indigenous communities has increased the use of traditional knowledge in marketing and branding.

ETHICAL AND SUSTAINABLE SOURCING
Raw material typically passes through many hands before landing in a final product. This makes tracking of material for regulatory purposes, including ABS, very difficult.
There is growing consumer interest in green and fair trade certification for raw materials.
The sector is characterised by booms and busts in demand for products.
Agreements between companies and communities for biotrade, or raw material sourcing, are more common than ABS agreements focused on research and development of new ingredients and products.

INDUSTRY AND ABS
Companies tend to have very low levels of awareness of the CBD and Nagoya Protocol, although this varies by region. In some regions, compliance with the CBD and national ABS measures is viewed increasingly as a business opportunity.
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The isolated pharmaceutical compound Vincristine, derived from Catharanthus roseus

A few of the compounds found in Gingko biloba botanical medicines

Plants parts used in selected top-selling botanicals

LEAVES
Senna (Senna alexandura)
Gingko (Ginkgo biloba)

SEEDS
Milk Thistle (Silybum marianum)
Flax seed (Linum usitatissimum)

FLOWER
St. John’s Wort (Hypericum perforatum)

FLOWER

SEEDS

BARK
Yohimbe (Pausinystalia yohimbe)
Pau d’Arco (Tabebuia spp.)

FRUIT
Elderberry (Sambucus nigra)
Cranberry (Vaccinium macrocarpon)
Saw Palmetto (Serenoa repens)

FRUIT

ROOT
Kava (Piper methysticum)
Maca (Lepidium meyenii)
Ginseng (Panax spp.)
Black Cohosh (Actaea racemosa)

ROOT
MARKET TRENDS

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Value of global mergers and acquisitions in the nutrition industry

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Global nutrition sales by product, 2012 (Consumer sales, USD million)

Growth in global supplements market (USD billion) (botanical medicines, vitamins and minerals)

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Global supplements markets

- **USA** (1)
- **South Korea** (4)
- **Taiwan** (9)
- **Australia** (7)
- **Italy** (5)
- **Russia** (6)
- **Germany** (8)
- **Japan** (3)
- **China** (2)
- **Canada** (10)

**Top 10 markets**

**Largest exporter of botanical ingredients**

**Highest growth rates – to pass USA by 2020**

**Other large markets:**
- Mexico
- Brazil
- France
- UK
- Poland
- Norway/Sweden
- India
- Indonesia
- Malaysia
- Thailand

7.2% **GLOBAL GROWTH RATE**

8.9% **GLOBAL GROWTH RATE**
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### The 20 top-selling herbal dietary supplements in the USA, 2013

<table>
<thead>
<tr>
<th>Herb</th>
<th>Latin Name</th>
<th>Geographic Origins</th>
<th>Sales (USD million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Horehound</td>
<td><em>Marrubium vulgare</em></td>
<td>Europe, North Africa, SW Central Asia</td>
</tr>
<tr>
<td>2</td>
<td>Yohimbe</td>
<td><em>Pausinystalia yohimbe</em></td>
<td>Central Africa</td>
</tr>
<tr>
<td>3</td>
<td>Cranberry</td>
<td><em>Vaccinium macrocarpon</em></td>
<td>North America</td>
</tr>
<tr>
<td>4</td>
<td>Black Cohosh</td>
<td><em>Actaea racemosa</em></td>
<td>North America</td>
</tr>
<tr>
<td>5</td>
<td>Senna</td>
<td><em>Senna alexandrina</em></td>
<td>North Africa</td>
</tr>
<tr>
<td>6</td>
<td>Cinnamon</td>
<td><em>Cinnamon spp.</em></td>
<td>Asia</td>
</tr>
<tr>
<td>7</td>
<td>Flaxseed</td>
<td><em>Linum usitatissimum</em></td>
<td>Europe, Mediterranean</td>
</tr>
<tr>
<td>8</td>
<td>Echinacea</td>
<td><em>Echinacea spp.</em></td>
<td>North America</td>
</tr>
<tr>
<td>9</td>
<td>Valerian</td>
<td><em>Valeriana officinalis</em></td>
<td>Eurasia</td>
</tr>
<tr>
<td>10</td>
<td>Saw Palmetto</td>
<td><em>Serenoa repens</em></td>
<td>North American</td>
</tr>
<tr>
<td>11</td>
<td>Aloe Vera</td>
<td><em>Aloe vera</em></td>
<td>South Africa</td>
</tr>
<tr>
<td>12</td>
<td>Bioflavenoid complex</td>
<td><em>Citrus spp.</em></td>
<td>South and Southeast Asia</td>
</tr>
<tr>
<td>13</td>
<td>Milk Thistle</td>
<td><em>Silybum marianum</em></td>
<td>North America</td>
</tr>
<tr>
<td>14</td>
<td>Ginger</td>
<td><em>Zingiber officinale</em></td>
<td>Asia</td>
</tr>
<tr>
<td>15</td>
<td>Horny Goat Weed</td>
<td><em>Epimedium spp.</em></td>
<td>North Africa/Asia</td>
</tr>
<tr>
<td>16</td>
<td>Garlic</td>
<td><em>Allium sativum</em></td>
<td>Eurasia</td>
</tr>
<tr>
<td>17</td>
<td>Red Yeast Rice</td>
<td><em>Monascus purpureus</em></td>
<td>Asia</td>
</tr>
<tr>
<td>18</td>
<td>Gingko</td>
<td><em>Gingko biloba</em></td>
<td>Asia</td>
</tr>
<tr>
<td>19</td>
<td>Horsetail</td>
<td><em>Equisetum spp.</em></td>
<td>Cosmopolitan, Europe</td>
</tr>
<tr>
<td>20</td>
<td>Bromelain</td>
<td><em>Ananas comosus</em></td>
<td>South America</td>
</tr>
</tbody>
</table>
DEMAND FOR ACCESS TO RESOURCES

TRENDS IN DEMAND FOR ACCESS AND PRODUCTS

<table>
<thead>
<tr>
<th>Year</th>
<th>Resources Used</th>
<th>Introduction of New Species</th>
<th>Use of Traditional Knowledge</th>
<th>Interest in Environmental and Social Concerns</th>
<th>Rising Affluence</th>
<th>Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1965</td>
<td></td>
<td></td>
<td>Identify use</td>
<td>Marketing</td>
<td>Proof of safety and efficacy</td>
<td>Identify cultivation or harvesting techniques</td>
</tr>
<tr>
<td>1990</td>
<td></td>
<td></td>
<td>Identify use</td>
<td>Marketing</td>
<td>Proof of safety and efficacy</td>
<td>Identify cultivation or harvesting techniques</td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td>Identify use</td>
<td>Marketing</td>
<td>Proof of safety and efficacy</td>
<td>Identify cultivation or harvesting techniques</td>
</tr>
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Patents are an increasing part of R&D and product development strategies.

<table>
<thead>
<tr>
<th>Species</th>
<th>Publications</th>
<th>Claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Aloe vera</td>
<td>3416</td>
<td>4257</td>
</tr>
<tr>
<td>2 Gingko biloba</td>
<td>1297</td>
<td>2964</td>
</tr>
<tr>
<td>3 Sillybum marianum</td>
<td>275</td>
<td>824</td>
</tr>
<tr>
<td>4 Serenoa repens</td>
<td>295</td>
<td>696</td>
</tr>
<tr>
<td>5 Centella asiatica</td>
<td>485</td>
<td>693</td>
</tr>
<tr>
<td>6 Hypericum perforatum</td>
<td>440</td>
<td>648</td>
</tr>
<tr>
<td>7 Echinacea purpurea and E. augustifolium</td>
<td>268</td>
<td>787</td>
</tr>
<tr>
<td>8 Curcuma longa</td>
<td>548</td>
<td>534</td>
</tr>
<tr>
<td>9 Panax ginseng and P. quinquefolius</td>
<td>847</td>
<td>683</td>
</tr>
<tr>
<td>10 Uncaria tomentosa</td>
<td>133</td>
<td>470</td>
</tr>
<tr>
<td>11 Hoodia gordonii</td>
<td>68</td>
<td>379</td>
</tr>
<tr>
<td>12 Arnica montana</td>
<td>233</td>
<td>330</td>
</tr>
<tr>
<td>13 Astragalus propinquis</td>
<td>137</td>
<td>269</td>
</tr>
<tr>
<td>14 Vaccinium myrtillus</td>
<td>232</td>
<td>247</td>
</tr>
<tr>
<td>15 Prunus africana</td>
<td>114</td>
<td>229</td>
</tr>
</tbody>
</table>

1 ‘Publication’ refers to publication of patent applications, not an issued patent;
2 ‘Claim’ refers to the scope of the protection covered by a patent, or the protection sought in a patent application.
Increased consumer interest in natural products and stories associated with indigenous communities has increased the use of traditional knowledge in marketing and branding.

Traditional knowledge remains important to companies for identifying new products, marketing, and acquiring regulatory approval.

Sources of TK
- Ethnobotanical collections
- Internet / databases
- Literature

TK and consumer interest

CONSUMER INTEREST IN TK
INDUSTRY INTEREST IN TK FOR MARKETING

1965
1990
2015
The sector is characterised by booms and busts in demand for products.

There is growing consumer interest in green and fair trade certification for raw materials.

Agreements between companies and communities for biotrade, or raw material sourcing, are more common than ABS agreements focused on research and development of new ingredients and products.

There has been a trend towards cleaner and greener products. Consumers today want to know more – what it is, where it came from, how it was produced. Sustainability and fair trade labels are growing, and maybe later in the process will come ABS and ethics, but those are still not something consumers, or most companies, think about.

— Industry representative in the US
Some companies are beginning to ask about regulations, including the CBD, and want to be in compliance with ABS. It is starting to be a market advantage against our competitors that we can bring clarity and certainty to the customer that the supply chain is ABS compliant.

– Manager, ingredient supply company

Companies tend to have very low levels of awareness of the CBD and Nagoya Protocol, although this varies by region. In some regions, compliance with the CBD and national ABS measures is viewed increasingly as a business opportunity.

The botanical sector (1990 – 2015)

Industry revenues

Green and fair trade certification

Regulation of safety, efficacy and quality

CBD

Industry awareness of ABS

1990

2015

SOURCES


The Access and Benefit-Sharing Key Points for Policy-Makers series has been produced to provide governments, companies, researchers, communities and others with background information to assist with the development of access and benefit-sharing measures to implement the Nagoya Protocol. The briefs are organised around central, key points on trends and practices in markets, research and development, and ABS. More detailed information on these sectors can be found at: www.bio-economy.org.za; www.abs-initiative.info; www.peopleandplants.org; CBD Bioscience at a Crossroads policy briefs: https://www.cbd.int/abs/policy-brief/default.shtml/; and in the upcoming book: http://www.routledge.com/books/details/9781138779099/

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