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‘Miracle’ cures face extinction

From a desert succulent that may ‘cure’ obesity, to a Chinese magnolia effective against previously untreatable cancers, hundreds of the planet’s most promising medicinal plants are facing an imminent threat, warn world’s experts.

Hoodia – A Namibian succulent that could ‘cure’ obesity.

Hou Po – A Chinese Magnolia effective against previously untreatable cancers.

Caterpillar Fungus – A parasitic fungus that may help slow aspects of the ageing process.

Looming Health Care Crisis: A new global study reveals that hundreds of medicinal plant species, whose naturally-occurring chemicals make up the basis of over 50% of all prescription drugs, are threatened with extinction. Sparking off fears of a global health care crisis, a consortium of leading experts acting through London-based organisation, Botanic Gardens Conservation International (BGCI), are calling for urgent action to help ‘secure the future of global healthcare’.

With 70% of all newly-developed drugs in the United States, the world’s largest and wealthiest pharmaceuticals market, being derived from natural sources, it is clear that despite major scientific advances, the future of human healthcare is still overwhelmingly reliant on the plant kingdom.

“We are using up a wide range of the world’s natural medicines and squandering the potential to develop new remedies“ says Sara Oldfield, Secretary General of BGCI “And yet it is perfectly possible to prevent plant extinctions”.

There was a time when scientists predicted that developments in biochemistry would mean that most if not all new drugs would be simply synthesised in the lab, however in recent years it has become increasingly clear that this is unlikely to happen. For while scientists are able to artificially replicate several medicinally-active compounds found in plants, a overwhelming number of these are still eluding all attempts to copy them, or it is simply not commercially viable to do so.

Take the world’s most widely-used cancer drug, Paclitaxel, for instance. Derived from the bark of several species of yew trees, its complex chemical structure and biological function has defied all attempts of commercial synthesis, gaining it the reputation for being “the kind of drug that would be impossible to design from scratch”. Yet with, until very recently, an average of 6 trees needed for just a single dose, its use has decimated wild yew populations across the world, with 80% of the trees in China’s Yunnan Province, once famous for its yew forests, destroyed within a three year period. “The dramatic decline in a range of yew species, highlights the global extinction crisis that is facing medicinal plant species.” says Oldfield.

Nowhere is this dependence on medicinal plants more acute than in developing countries, with the World Health Organisation estimating that an astonishing 80% of the global population, some 5.3 billion people, rely on traditional plant-based medicine as their primary form of healthcare, and in many cases collection and sales of these plants provide their only form of livelihood. Yet it is exactly in these areas that these plants are under most threat, putting the rural poor at the sharp end of the looming healthcare crisis.

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"The loss of the world's medicinal plants may not always be at the forefront of the public consciousness, however it is not an overstatement to say that if the precipitous decline of these species is not halted, it could destabilise the future of global healthcare, putting many millions of lives at risk." reports Belinda Hawkins the report author.

What BGCI is doing to tackle this: The BGCI report for the first time combines the work of the world's leading botanists, conservationists, healthcare professionals and traditional healers to identify which medicinal plant species are most at risk and what steps are needed to save them.

"Our report calls for co-ordinated global conservation efforts to save medicinal plants working with local communities and drawing on the skills and expertise of botanic gardens that have been involved in medicinal plant study since their first establishment 500 years ago.," says Oldfield.

Notes to Editors

Botanic Gardens Conservation International (BGCI) is a membership organization linking botanic gardens in over 120 countries in a shared commitment to biodiversity conservation, sustainable use and environmental education. BGCI aims to mobilise botanic gardens and work with partners to secure plant diversity for the well-being of people and the planet.

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Plant Profiles:

Hoodia - *Hoodia gordonii* - Origin: Namibia

- **Used for centuries by the San Bushmen of Namibia to stave off hunger on long hunting trips.**
- **The plant has sparked interest for its perceived ability to suppress appetite and is under investigation as a key weapon in the fight against obesity.**
- **Britney Spears famously has been taking this in the form of lollipops as part of her efforts to loose weight.**

With pharmaceutical giants such as Pfizer having expressed an interest into the plant's appetite suppressing properties, there has been an explosion of speculation into its use as a 'miracle' weight loss drug.

Fuelled by such speculation vast quantities of the plant have been ripped from the wild, decimating entire populations. The catch 22 is that until its properties are proven few will invest in planting the species as a commercial crop, but scientists fear that by the time this is established for sure the plants may be on the verge of extinction.

Hou Po - *Magnolia officinalis* - Origin: South West China

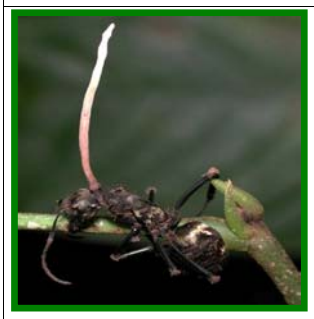
- **Contains Honokiol, a chemical that has been proven to be effective in treating previously untreatable cancers.**
- **Honokiol also helps soften blood vessels, thereby stemming the onset of major cardiovascular disease.**
- **Also used to treat senile dementia, by improving blood flow to the brain.**

One of the most ancient flowering plants, dinosaurs once walked amongst groves of magnolias. Yet despite often held up as the species from which all today's flowers evolved, half of the world's magnolias are now threatened with extinction.

Bark from several different species has been used in traditional Chinese medicine for up to 5,000 years, where it is considered one of the most important therapeutic herbs. It's antioxidant effect, 1,000 times more potent than Vitamin E, has been proven to successfully reverse cardiovascular disease, slow the onset of senile dementia, and even hold promise to treat a variety of previously untreatable cancers.

Magnolia bark extract also has powerful anti-bacterial effects, and when added to chewing gum kills 63% of the bacteria that cause bad breath, in comparison to the traditionally used peppermint oil, which kills just 3.5%.

Caterpillar fungus - *Cordyceps sinensis* – Origin: China and Bhutan



- **One of the most important species in traditional Chinese medicine, *Cordyceps* extracts have been demonstrated to raise the oxygen-carrying capacity of the blood.**
- **This has been used to dramatically reduce the times of Chinese long distance runners, so much so that they attracted suspicions of drug use.**
- **This same ability has been shown to slow down the decline in aerobic fitness and energy levels that is associated with old age.**

Cordyceps is a parasitic fungus that grows in the bodies of various species of insect and insect larvae in the tundra of the Tibetan Plateau. Once infected by the fungal spores, the insect's body becomes slowly filled by the branching fungus. The fruiting body then explodes out of its head, like something from a science fiction film, to distribute its spores into new hosts.

Over collection has drastically reduced *Cordyceps* populations in the Tibetan Plateau, with its effects increasingly visible on the landscape of this fragile ecosystem.

Autumn Crocus – *Colchicum autumnale* - Origin: Europe and North Africa

- **Used as an assassin's poison in Ancient Greece.**
- **Vital to many plant breeding efforts, bearing the ability to make sterile hybrids fertile.**
- **Recorded as successfully curing leukaemia.**
- **One of the few effective natural treatments for gout.**

In mid September park lawns across the country become dotted with delicate pink flowers, as the Autumn Crocus comes into bloom.

Yet few today would recognise it as one of the most deadly poisons of the ancient world. The Ottomans, Romans and Greeks all used an extract of the roots as an animal poison, with some sources citing its widespread use in warfare – for example poisoning wells. In smaller doses however it has a variety of therapeutic uses, including the treatment of gout and leukaemia.

Perhaps its most surprising secret is that it is key to many modern plant breeding efforts. The same substance responsible for its toxicity also has the remarkable ability to render highly-manipulated sterile hybrids fertile again, working by doubling the chromosome number.

However the stunning petals of the Autumn crocus may prove its undoing, as it is under grave threat from over-harvest for the horticultural trade and habitat loss.

Chinese Yew – *Taxus wallichiana* **- Origin: South West China**

- **The source of the world's most popular anti-cancer drug.**
- **Sacred to the Celts, as the tree of eternal life.**
- **Paradoxically all parts of the tree are also deadly poisonous**
- **Shakespeare, Keats, Wordsworth, Tolkein, Agatha Christie and J.K. Rowling have all sung its praises.**

The Ancient Celts planted yew in graveyards and buried its branches with their dead, believing that it had the power to grant eternal life. Indeed many of these trees still exist in the churchyards that were built directly on top of ancient Celtic sites, and are now counted as some of the oldest trees in Europe, with a lower estimate of 2,000 years.

Perhaps rather fittingly, it is a compound extracted from yew that is leading the fight against breast, ovarian and lung cancer. Taxol, found in the leaves and bark of yew trees is the key constituent in many chemotherapy regimes, used in the world's number one selling breast cancer drug.

However since the discovery of this action in the 1960's, there has been a precipitous decline in several yew species. Indeed with the bark of 6 trees needed for just a single dose of the drug, the global clear cut felling of these trees for their medicinal properties has left many teetering on the verge of extinction. In fact in the Yunnan province of China, 80% of its native yew's were wiped out in just 3 years, triggering a burgeoning ecological crisis.