An interface between fieldwork, laboratory and the world of business with a view to adding value to Traditional Knowledge

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Medicinal plants: Nature’s medicine chest

- Medicinal plants form the single largest grouping
  - 30,000 species, of which 33% are trees

- Over 80% of the world’s population depends on medicinal plants for their Primary health care (WHO)
- 60% of drugs sold on chemists’ shelves are of natural origin (including antibiotics), 25% are directly derived from medicinal plants

Tropical, sub-tropical Africa is home to 40-45,000 higher plant species, high potential industrial value

Constitutes at least 25% of the global pool of plant genetic resources and has contributed significantly to the world’s trade in genetic material.
To date Africa has only contributed 83 of the world’s 1100 leading commercial medicinal plants and which are of African origin.

Among those plants that perhaps come to mind are:

*Catharanthus roseus* – Madagascan Periwinkle

*H. procrumbens* – Devil’s Claws

*R. vomitoria* - Rauwolfia
Lesser known but **Important** African plants

- *Adansonia digitata* (Baobab)

*Cyclopa genistoides* (Honey bush)

*A. meleguata* (Grains of Paradise)
Potential of Baobab (*Adansonia digitata*)

*Adansonia digitata* (Baobab)

- Highly appreciated by the Neutraceutical sector
- Growing interest by cosmetic companies.

**Cold pressed seeds:** high quality oil used in cosmetic creams & milk – after sun care Baobab Co. produces extracts from fruit for nourishing the epidermis & shampoo
Potential of herbal remedies for providing alternatives to allopathic medicines?

*Mesembryanthemum tortuosum* (Sceletium)

Traditionally used by the Khoi San people as a sedative

Activity ascribed to the presence of Mesembrine and other alkaloids which show serotonin re-uptake inhibitors

Plant extract could have therapeutic applications for anxiety and depression, and other serious mental health conditions

Could this plant be the African alternative to Prozac or St. John’s wort (*Hypericum* sp.) or even *Valerian* species?
Pelargonium sidoides – Given Mankind the famous Stephen’s syrup
Adulterants and Adulterations: The dried product may be adulterated with the very similar-looking *P. reniforme*. Morphological distinction of the dried product is extremely difficult, so that chemical analysis is the only reliable method. Whereas *P. sidoides* contains umkaliin and its 7-O-methyl ether (≤5.7% tannin-like compounds) as major constituents, these are characteristically low or absent in *P. reniforme*.


Standard specifications (WHO, 1998)

**Microbiology:**
- Salmonella spp. – negative
- Escherichia coli – negative
- Aerobic bacteria – not more than 10^5/g or ml
- Fungi – not more than 10^4/g or ml
- Enterobacteria and Gram-negative bacteria – not more than 10^3/g or ml
- Total ash: Not more than 5%
- Acid-insoluble ash: Not more than 1%
- Water-soluble extractive: Not less than 2%
- Foreign matter: Not more than 2%
- Pesticide residues: In accordance with national requirements. Aldrin and dieldrin – not more than 0.05 mg/kg.
- Aflatoxins (B2, G1, G2, and B1): ≤ 4 ppb.
- Heavy metal Lead in final dosage form – not more than 5 ppm, cadmium in final dosage form – not more than 0.3 mg/kg.

**PHARMACOLOGICAL PROPERTIES**

Evidence for immune stimulation (Kayser et al., 2001), NO induction (and antibiotic effects of the proprietary substance Unkaloabo have been published (Kayser & Kolodziej, 1997, Kolodziej et al., 2001). Recent studies showed significant effects on nasal epithelial cells (Neugebauer et al., 2005) and against mycobacteria (Nebel & Taylor, 2004). The antiseptic and antiviral effects are attributed to gallic acids and other phenolic compounds, whereas the immunomodulatory activity is considered to be due to a combination of phenolic compounds and the numerous coumarins (umkaliin and derivatives). For a comprehensive review of the known biological activities of *P. sidoides* see Brendler and Van Wyk (2008).

**Clinical Studies:** A total of 18 clinical trials have thus far been conducted, several of which were randomised, double-blind and placebo-controlled. EP® 7630, an extract of *P. sidoides*, has been shown to effectively shorten the severity and duration of acute bronchitis and tonsillitis/pharyngitis, most notably in children. Several other randomised, double-blind, placebo-controlled studies of special extracts on children and adults have followed (Brendler et al., 2000, Haavivi et al., 1996, Matthey et al., 2003). For a review of the clinical evidence see Aghababaie et al (2008) and Brendler and Van Wyk (2008).

**Pharmacokinetic Properties:** not investigated.

**SAFETY DATA**

**Single Dose Toxicity:** Overall safety and a very low incidence of side effects have been confirmed (Conrad et al., 2007). An unpublished brine shrimp test indicated complete safety. The observational study mentioned above (Haidvogel et al., 1996) also indicates safety (very low incidence of side effects – only eight out of 742 patients).

**Clinical Safety Data:** Safety has been investigated in numerous clinical trials (see Clinical Studies) and was found safe for use in adults and children with a minimum number of adverse effects reported.

**KEY USAGE**

**Therapeutic Indications:** Acute bronchitis in children and adults.

**Dosage, Method and Duration of Administration:** Ethanol extracts are used in a proprietary herbal tincture known as Unkaloabo. This recommended dose of EP® 7630, a root extract from *P. sidoides,* for adults and children over the age of 12 years, is 30 drops (1.5 ml) three times per day for 7 days. Children aged 6-12 years may take 20 drops (1.0 ml) three times per day. Infusions or decoctions are traditionally used, but dosage information on the crude herb is not available.

**Contraindications:** A theoretical risk of interactions with anticoagulants and antiplatelet drugs could not be confirmed.

**Special Warnings and Precautions for Use:** Can be safely consumed when used appropriately. A total of 34 case reports of allergic (hypersensitivity) reactions have been recorded through the WHO’s pharmacovigilance programme, which may be associated with the use of *Pelargonium* extract, all originating from Germany (De Boer et al., 2007).

**Pregnancy and Lactation:** The extract of *P. sidoides* root (EP® 7630) is contraindicated during pregnancy and lactation, as no specific data on its effect on pregnant or lactating women are available.

**Evaluation of Efficacy:** Acute bronchitis in children: adverse efficacy clinically proven (Special extract) (Brendler & van Wyk, 2008).

**TRADE INFORMATION**

**Nature of plant material:** Conservation status: not listed. Origin: Eastern Cape Province. Most of the material is still wild-crafted, but crop development has progressed to a point where significant quantities of raw material will soon be produced from cultivated plants. The plant flowers over a long period during the summer months. Harvesting usually takes place after the end of the growing season.

**Processing and Storage:** The tuberous rhizomes are simply sliced and dried. Rapid kiln drying yields a better-quality product. Stability of product: Unknown.

**REGULATORY INFORMATION**


**Regulatory / Registration Status:** Licensed as a herbal medicine with full drug status in Germany, as traditional herbal medicine in the UK.


**REFERENCES**


Kayser O, Kolodziej II (1994) P14 Courmarins from medicinally used roots of Pelargonium sidoides
Reverse pharmacology has helped unleash the potential of **Curcuma**: against diabetes, arthritis & hepatitis and cancer prevention

Re-assess the potential of **Centella** (Memory enhancer) as an antiaging agent

**Pois a gratter** – **Mucuna** sp. (Aphrodisiac) – Anti-Parkinsonism
FROM RESEARCH TO THE MARKET PLACE
Case History – Tahitian Noni® Juice (Morinda citrifolia)

• Application to Belgium by Morinda Inc (2000)

• Was Assessed by MS
  – Toxicological Tests (High Dose)
  – Intended Market/Consumption forecast
  – Allergy Studies Required

• Current Status – Approved since June 2003 for marketing in EU without claims

• Cost of application estimated at US $1 million
EU Market Sizes

- Functional Foods US $3.5 billion
- Food Supplements US $2.5 billion
- Herbal Medicines US $4 billion
- Essential Oils US $250 million

= Opportunity
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Incorporated in 2009 in Mauritius, CEPHYR belongs to the CIDC (Centre International de Developpement Clinique) group of companies with CRO Status. The holding (CIDC & CIDP) performs Clinical trials on behalf of Pharmaceutical and Cosmetic Companies.

At CEPHYR, we propose to:
- Add value to Herbal medicine through the concept of Reverse Pharmacology
- Search for active phyto-ingredients and their application in Cosmetic, Therapy, Aromatherapy and Fortified foods
- Assist in the development of Marketing and Communication strategies
- Assist in the formulation of Clinical Trials protocols according to established international regulations
Nagoya Protocol (2010)

Mauritius has ratified in September 2012

- Marks a new era in the global relationship between providers and subsequent users of genetic resources

- The challenge is for researchers, industry and all levels of Government to develop, adopt and begin to use global standards for the use of genetic resources
MERCI POUR VOTRE ATTENTION

THANK YOU FOR YOUR ATTENTION