



# **The Use of African Botanicals in the Formulation of Cosmetic Products**

by

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# Why African Botanicals?

- Inherent post-apartheid fascination with the African continent
- Mystique surrounding African ingredients, particularly outside of the African continent
- Many African botanicals likely to possess high therapeutic value
- Excellent foundation for ingredient-led stories or “socio-politically responsible” marketing concepts

# ...and possible problems?

- “Add it and sell” philosophy is far too simplistic
- Availability of commercially acceptable extracts still limited but improving gradually
- Poor batch-to-batch consistency (from some sources)
- Inadequate testing and documentary support
- Bio-prospecting regulations may cause significant problems

# African Botanicals in Vogue



African Sausage Tree  
(*Kigelia africana*)



Green Rooibos  
(*Aspalathus linearis*)



Baobab Tree  
(*Adansonia digitata*)



Honeybush  
(*Cyclopia genistoides*)



Buchu  
(*Agathosma betulina*)



Devil's Claw  
(*Harpagophytum procumbens*)



Cape Aloe  
(*Aloe ferox*)



Cancer Bush  
(*Sutherlandia frutescens*)

# African Botanicals in Detail



# *Kigelia africana*



- In the Ndebele tribe, if a family member dies far from home, a Sausage Tree fruit will be buried in place of the body
- The Tonga women of Zambezi valley regularly apply a cosmetic preparation of *Kigelia* fruits to their faces to ensure a blemish free complexion
- *Kigelia africana* dried fruit is powdered and used as a dressing for ulcers, sores, syphilis and is also applied locally for rheumatism
- Fruit extract is useful to develop the bust and reinforce the strength and stability of breast collagen fibers
- A chemical investigation has confirmed that the fruits have anti-microbial activity



# *Adansonia digitata*



- The “upside down” tree with “longevity power”, which is believed to heal its “wounds” in the same way as humans do
- Baobab fruit pulp has traditionally been used as an immunostimulant, anti-inflammatory, analgesic, pesticide and astringent
- The fruit pulp has seven to ten times the vitamin C content of an orange (280-300mg/100g compared with 51mg/100g)
- Baobab is excellent for restoring and moisturising the skin due to its penetrability and nourishing properties
- It can also be used to treat eczema and psoriasis

# *Agathosma betulina*



- Buchu is used to treat cellulite, rheumatism and is a common scent within perfumes and colognes
- Topical application has anti-bacterial and anti-fungal effects - it also acts as a natural insect repellent
- Contains diosphenol, a natural antiseptic with mild diuretic properties
- Contains rutin, a compound commonly used to treat poor blood circulation, varicose veins, skin bruising as well as high blood pressure



# *Aloe ferox*



- Cape aloe, bitter aloe (English), *bitteraalwyn* (Afrikaans), *umhlaba* (Sotho, Xhosa, Zulu)
- The yellow exudate from the leaves is boiled to create the traditional aloe lump
- Aloesin, a chromone derivative from the bitters is used in the cosmetics industry, especially in Japan, as a natural skin lightener
- The inner fleshy gel from the leaves is either drunk as a health supplement or is applied to open wounds, burns and other injuries and is a traditional treatment for wound healing
- Hydrating, insulating and protective effects can be expected with topical products

# *Aspalathus linearis*



- *Aspalathus linearis* is a popular health beverage, prepared and used in much the same way as black tea
- The health properties are ascribed mainly to the low tannin content, high levels of minerals and the free-radical capturing properties of the flavonoids
- Several studies have indicated that the tea has antioxidant, anti-mutagenic and anti-ageing effects
- Rooibos tea is widely used in the cosmetic industry and is believed to be beneficial in cases of eczema and similar skin disorders

# *Cyclopia genistoides*



- *Cyclopia genistoides* is used in the manufacture of health drinks
- It has been used historically for its positive effects on the urinary system
- Honeybush shares many similar characteristics with rooibos, but differs greatly in taste and aroma - the tea is low in tannin and is caffeine free
- Honeybush extract has antioxidant properties, as well as protective effects against lipid peroxidase

# *Harpagophytum procumbens*



- *Harpagophytum procumbens* is used to treat rheumatism and arthritis, and as a general health tonic
- In Germany, it is used in supportive therapy for degenerative disorders of the locomotor system and for lack of appetite and dyspeptic problems
- An ointment is made from the root material which is applied to sores, ulcers and boils
- A large number of clinical and clinical studies have confirmed the mild analgesic, soothing and anti-inflammatory properties of this plant

# *Sutherlandia frutescens*



- *Sutherlandia frutescens* is a well-respected adaptogen (Substances that cause minimal physiological changes, have a broad spectrum of activity and have a non-directional normalising effect)
- Contains pinitol, which exerts an insulin-like effect, therefore lowering blood sugar levels and increasing the retention of creatinine by muscle cells, thus playing a role in increasing energy levels
- Canavanine has documented anticancer and anti-viral activity and has been patented for antiviral activity



# African Botanicals...

...successful development to  
market



- Genus and source must be as consistent as possible
- Botanical material must be obtained from sustainable sources
- Socio-political, economic and ecological issues must be taken cognisance of
- Pre-extraction treatment may be necessary (drying, gamma radiation, etc.)

- Botanicals most frequently presented in hydrophilic extraction media:
  - » Water
  - » Hydro-glycolic mixtures
  - » Hydro-alcoholic mixtures
- Lipophilic extraction media sometimes utilised:
  - » Mineral oil
  - » Caprylic/capric triglyceride
- Powder forms utilised:
  - » Spray-dried
  - » Freeze-dried

- Consistent quality of botanical feedstock, standardised as far as is practicable
- Manufacturing facility should comply with recognised international standards of GMP (ISO/SANS 22716)
- Finished extract should be standardised as far as is practicable
- Product should be manufactured according to a predefined commercially acceptable specification

- Raw material & microbiological specifications
- Individual certificates of analysis (by batch)
- Safety data sheet (SDS - GHS format)
- Product safety/toxicology portfolio
- Allergen declarations (where relevant)



- Must clearly and concisely defined all critical parameters pertaining to the finished extract:
  - Trade name/botanical name/synonym
  - INCI Name (EU and US designations)
  - Source (plant part)/description
    - CAS Number (where applicable)
    - EINECS/ELINCS Number (where applicable)
    - Physico-chemical parameters (particle size, pH, etc.)
      - Moisture content
      - Solids content
        - Solubility (hydrophilic or lipophilic)
        - Packaging and shelf-life

- Botanicals very susceptible to microbiological contamination
- Preservative system must be carefully designed:
  - Conventional preservation in aqueous-based systems (regulatory status and consumer opinion)
    - Hydro-glycolic systems may be self-preserving
      - Powder systems (anhydrous) may be self-preserving
        - Sterile packaging (once-off use only)

# Safety Data Sheet

- Required for safe handling, storage and transport of any material
- 16 section GHS format is recommended:
  1. Product & Company Name
  2. Composition
  3. Hazards Identification
  4. First Aid Measures
  5. Fire Fighting Measures
  6. Accidental Release Measures
  7. Handling & Storage
  8. Exposure Controls/Personal Protection
  9. Physical & Chemical Properties
  10. Stability & Reactivity
  11. Toxicological Information
  12. Ecological Information
  13. Disposal Considerations
  14. Transport Information
  15. Regulatory Information
  16. Other Information

- Adequate safety data must exist to prove safety to human health in envisaged application(s) (and foreseeable misuse)
- May require toxicological testing to be carried out (EU animal testing bans were enacted in 2009 and 2013)
- Data must be sufficiently robust to satisfy a full Safety Assessment as required by European Cosmetic Regulation 1223/2009

# INCI Designation

- All ingredients intended for use in cosmetic products must have a designated INCI name
- Application for new INCI names must be made through the PCPC (Personal Care Products Council) in the US
- Average duration to assign a new INCI name is approximately 3 - 6 months
- Application requires comprehensive data about material source, composition and manufacture



So, please remember...

...it's not just a question of "add it  
and sell!"