Herbal Extracts

The Cornerstone of Complementary Healthcare Products
Definitions…

- Herbal Material (also called crude herb, raw herb, biomass, starting material):

  *A plant or part of a plant, whether whole fragmented, cut or ground and in an unprocessed state (whether fresh or dried).*

A Herbal Material contains all of the original chemical compounds found in the plant. They can contain thousands of chemical compounds which may or may not have a therapeutic action.
- Herbal Extract (also called herbal substance, herbal preparation):

  A Herbal Material that is processed by drying, crushing, distilling, extracting, expressing/ juicing, comminuting and/or mixing with an inert diluent substance or another herbal substance.

  The process of Herbal Extraction is usually designed to maximise a certain portion of the original chemical compounds found in the plant, many of which have a therapeutic action. Alternatively, Herbal Extraction may be used as a method of preservation (dried/ fresh herbs have a much shorter shelf life).

  A number of chemical compounds are discarded in this process.

  e.g. Dry extract, Standardised extract, Liquid extract, Tincture, Galenical extract, Concentrated extract etc
Definitions...

- **Solvent** (also called extraction solvent):

  *A substance which is capable of dissolving other substances.*

A solvent will dissolve (or extract) the target active compound(s) found in the Herbal Material to allow for a more potent/concentrated Herbal Extract.

There are many different types of solvents available for use in Herbal Extraction. The solvent is chosen based on its ability to dissolve the target active compound.

A solvent may be used in isolation (e.g. 100% Ethanol) or as a mixture (e.g. 45% Ethanol/55% Water—referred to as 45%E/W).

A solvent is usually a liquid (e.g. ethanol, methanol, water, acetone, hexane, ethyl acetate, butanol, dichloromethane etc), but can also be a gas (e.g. carbon dioxide for supercritical extraction).
Definitions...

- **Excipient (also called diluent):**

  *An inactive substance that serves as the vehicle or medium for a Herbal Extract and does not have any therapeutic action.*

  Excipients are used to help with standardisation, as a preservative, to improve flow of the powder through machinery, to balance pH, to stabilise active compounds etc.

  There are many different types of Excipients available for use in Herbal Extract processing. Common excipients include maltodextrin, silica dioxide, lactose, gum arabic etc.
Definitions...

- **Extract Ratio:**

  *The quantity of Herbal Material required to produce a stated quantity of Herbal Extract. It is also used to indicate the strength of the Herbal Extract.*

  \[
  5:1
  \]

  Where: 5 is the quantity of Herbal Material used (in kg) and 1 is the quantity of Herbal Extract delivered after the extraction process (in kg). That is, 5 kg of Herbal Material is used to produce 1 kg of Herbal Extract.

  Liquid Extracts are usually 1:1 or 1:2
  Tinctures are usually 1:5
  Galenical Extracts are usually 4:1, 5:1, 6:1, 7:1, 8:1, 9:1 or 10:1
  Concentrated extracts have an Extract Ratio of greater than 10:1
Definitions...

- **Dry Herb Equivalent:**

  The equivalent quantity of Herbal Material in a given quantity of Herbal Extract.

  \[
  \text{Dry Herb Equivalent} = \text{Herbal Extract} \times \text{ Extract Ratio}
  \]

  e.g. If a product is formulated to contain 100mg of a **Herbal Extract** with an **Extract ratio** of 5:1, the equivalent to dry Herbal Material is 500mg.

  This calculation is important for labels (see below) as well as for the comparison of the dosage of a medicine against the traditional literature and other medicines.

  **Each tablet contains extract equivalent to dry:**

<table>
<thead>
<tr>
<th>Herbal Material</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silybum marianum (St Mary's Thistle) seed</td>
<td>500mg</td>
</tr>
<tr>
<td>Taraxacum officinale (Dandelion) root</td>
<td>750mg</td>
</tr>
<tr>
<td>Cynara scolymus (Globe Artichoke) leaf</td>
<td>200mg</td>
</tr>
</tbody>
</table>
Definitions...

- **Active Compound** (also called active constituent, phytochemical, chemical compound or marker compound):

  *Chemicals which are naturally present in plants which are important for a given therapeutic effect of a Herbal Material or Herbal Extract.*

  When Active Compounds are tested in Herbal Materials and Herbal Extracts, the test is usually referred to as an **Assay**.

  ![Caffeine molecule]

  E.g. Caffeine is an Active Compound found in Green Tea
Definitions...

- **Standardisation:**

  *The process by which a Herbal Extract is produced to ensure that it contains a predefined quantity/ concentration of an active compound, and therefore also a predefined therapeutic outcome.*

  E.g. The above Green Tea Extract is Standardised to contain 10% Caffeine, along with other active compounds.
How are Herbal Extracts Made?

**Herbal Material**
Dried or Fresh herb, generally cut into small pieces

**Extraction**
Solvent is poured onto the Herbal Material and is macerated and percolated

**Filtration**
Physical Filtration or Density Separation

**Concentration**
The Filtrate is concentrated through heat and/or pressure

**Drying**
The concentrated fluid is dried to a powder

**Milling, Sieving and Blending**
The dried powder is milled (ground), sieved and blended

**Packing**
The Extract is packed into pharmaceutical or food grade, non-reactive packaging

**Quality Control**
The Extract is checked thoroughly prior to release

*Successive extraction may be employed utilizing different solvents with each extraction phase*
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