

## BOTANICAL EXTRACTION PROCESS FLOW CHART



### RAW MATERIAL

The first step involves selecting and preparing the raw materials. These materials are typically botanicals or herbs that contain the desired compounds to be extracted. This stage may include cleaning, sorting, and sometimes pre-treating the materials to enhance extraction efficiency.



### RAW MATERIAL CRUSH

After selection, the raw materials undergo crushing or grinding. This mechanical process breaks down the plant material to increase the surface area, making the desired compounds more accessible for extraction. The degree of crushing can significantly impact the efficiency and outcome of the extraction process.



### EXTRACTION & FILTRATION

The extraction step involves separating the desired chemical compounds from the raw, crushed material. This can be done using various methods, including solvent extraction, steam distillation, or supercritical fluid extraction, depending on the compounds of interest. The choice of method affects the purity and yield of the extract. After extraction, the filtration step is used to remove solid particles from the extract, leaving a clean liquid or solution that contains the desired compounds. Filtration can be simple, using paper filters, or more complex, employing techniques like centrifugation or vacuum filtration.



### CONCENTRATION

The extract is concentrated under reduced pressure at controlled temperature to remove excess solvent while preserving thermolabile actives. The concentration is monitored by HPLC/UPLC until the target dry matter and active compound content are achieved. Standardization to a defined active percentage is accomplished by blending concentrated fractions or purified extracts, ensuring consistent potency across



### SPRAYING, DRYING AND SIEVING

In this step, the concentrated extract is transformed into a fine powder through a process called spray drying. The solution is sprayed through nozzles into a hot chamber, where the solvent quickly evaporates, leaving dry particles of powder. This method is particularly useful for creating water-soluble powders from herbal extracts.



### POWDER FORMULATION

After drying, the powder may undergo further crushing to achieve the desired fineness and homogeneity. Different powders can also be blended to formulate the final product, according to specifications.



### PACKAGING

The final step is the packaging of the finished powder into appropriate containers. Packaging protects the product from external influences, including moisture and light, ensuring its stability and shelf life.