afrigetics
BOTANICALS

PROCESS FLOW SHEET

ZULUTEST TM

(Ultrasonic, Freeze-dried extract)

VERSION 03/2013

Step 1 : Pre-harvest quality assessment

PROCESS	CHECKS
PRE-HARVEST HORTICULTURIST IDENTIFICATION OF SPECIES AND ACTIVE INGREDIENT ASSAY. Live plant material is inspected by in-house horticulturist to determine species correctness. Samples tested for active ingredients.	Site for harvesting is inspected in advance of the event to determine that the cultivated material is sufficiently mature for harvesting. Species are checked as per the voucher specimen referenceS and active ingredient analysis.
ANALYSIS OF SELECTED SITE PLANT MATERIAL Reference material from the harvesting site is inspected to check the quality of the herb.	Fresh material is checked for species correctness, maturity, and for any signs of rot, damage or adulteration with other species.

Step 2: Harvest

PROCESS	CHECKS
HARVESTING Pre-determined blocks for harvesting are selected by farm manager. Leaves and stem are plucked from live plants and excess soil and foreign matter removed then placed in agricultural sacks.	Ensure that the harvesters are skilled in identifying the plants as per in-house quality requirements for raw material: species correctness, maturity, and for any signs of rot, damage or adulteration with other species.
ANALYSIS OF HARVESTED PLANT MATERIAL Reference material from the harvested material is randomly selected from raw material bags and inspected to check quality criteria.	Representative samples of harvested material are selected from random bags across the sample group. Material is re-checked for compliance with quality controls criteria.

STEP 3: Receiving of goods at processing facility

PROCESS	CHECKS
RECEIVING: Cultivated plants are received at processing facility.	Goods are received and individual bags are assigned numbers, batch code is assigned. Origin, weight and date of harvest are noted by QC manager. Discrepancies noted and reported.

Step 4: Processing into dried herbs

PROCESS	CHECKS
INSPECTION AND REPORTING	Fresh material is unpacked and moved into plastic crates for washing and rinsing with cold water. Checks for: presence of rotting, dead, dry plant matter, check for species correctness, check for foreign matter (wire, wood, stones, mud, plastic etc). irregularities are removed and noted by weight and photographed for record keeping. Foreign matter is removed and safely discarded. QC manager must take notes of any discrepancies.
WASHING, STEAM STERILIZE, SLICING	Material that has passed initial QC assessment is now submitted to receiving area. Crates are sprayed with cold water and checked during the rinse to remove excess foreign matter (high pressure hose). QC manager must determine if steam sterilization is necessary. Washed material must be inspected before moving to processing area for mulching.
DRYING	Mulched plants are removed from trays and placed on gas dryer beds. Material should be checked for even distribution across dryer. Goods are dried for allotted time. Once goods are dry, samples should be checked for moisture levels. If compliant, proceed to next step or repeat drying process.
MILLING	Dry material is placed onto milling conveyor. Check for foreign matter and remove if required.
SIFTING	Milled powder is placed on sieve conveyor with appropriate sieve size as per product specification.
PACKING	Milled, sieved powder can now be checked for consistency. Place material in polyprop bags and place inside agricultural bags for sealing. Assign batch number and bag numbers with noted date and time of production. Individual bags must be packed on wooden crates in storage area of warehouse.

Step 5: Extraction

PROCESS	CHECKS
RECEIVING	Bags are received at processing station and checked for integrity of packaging. Compromised packaging such as leaks, tears or damage to bags must be noted. Goods must be checked against quality specifications for compliance to standards. Any material that is not compliant must be quarantined and noted to QC manager for return to warehouse.
SOAKING, EMULSION PREPARATION	Milled powder must be soaked at 6:1 ratio with cold water overnight. The emulsion must be blended into a paste and checked for inconsistencies such as lumping.
ULTRASONIC EXTRACTION	Emulsion is put through ultrasonic extraction. Specifications for product must be noted such as length of time and frequency applied as per manual.
FREEZE-DRYING	Emulsified extract is removed from machine and laid into freeze-dryer trays where it is checked for even consistency across the tray. Freeze-drying is performed as per specifications and in-house expertise. Moisture must be checked after freeze-drying process is complete. Should material be compliant it can proceed to next step.
MILLING, SIFTING	Freeze-dried clumps are placed onto milling conveyor. Check for foreign matter and remove if required. Milled powder is placed on sieve conveyor with appropriate sieve size as per product specification.
PACKING	Milled, sieved powder can now be checked for consistency. Place material in polyfoil bags and vacuum sealed then placed inside agricultural bags for sealing. Assign batch number and bag numbers with noted date and time of production.

6. Microbial and laboratory tests

QC TESTS - WHO (1998)	
1. MOISTURE, HEAVY METALS, PESTICIDES, MICROBIAL TEST, ASSAY.	Batch representative sample sent to analytical laboratory for tests to check conformity to AfrHP requirements. Active ingredient assay checked for compliance to alkaloids content (more than 0.5%).

QC TESTS - WHO (1998)	

Step 7: Batch completion, Storage and sale:

BATCH COMPLETION	Batch results analyzed for compliance to specification. COA compiled and signed off by QC manager. if specifications are not met then goods must be quarantined and further actions taken.
STORAGE AND SALE	Goods approved for sale are stored in appropriate area in warehouse, final batch size noted, stock control updated.

1. WHY WE USE ULTRASONIC EXTRACTION?

Actives found within the cellular structures of organic materials have for a long while been sought as an alternative and more natural treatment compared to synthetic and chemical cures. The typical method of extraction uses chemical processes to rupture the cell walls and dissolve active ingredients into a carrier such as maltodextrin. The technique used with ultrasonic extraction is to bombard the cellular matter with high frequency sound waves which rupture the cell walls of the plant material in a non-thermal, non-chemical manner. This method is said to disrupt 99% of the cell structures so there is no waste product. Additionally, by omitting the use of chemical solvents there is limited reduction of the integrity of the biologically active profile of the plant matter and therefore possibly better assimilation in the human body.

2. WHY DO WE USE FREEZE DRYING?

The process of freeze-drying is the most advanced form of preservation available to the food industry today. By a combination of vacuum and ultra cold conditions, freeze-drying removes almost 100% of the water inside the plant matter and therefore leaves no atmosphere for bacteria to grow. This process can preserve plant material in almost perfect state of freshness for 5 years, provided it is stored correctly. Research suggests that freeze-drying is the most effective way to preserve active ingredients in plant material for medicinal and nutritional use and this is why we have applied the process to our herbal extracts: it ensures their long term stability, improved shelf life, better preservation of the active ingredients and retains a very high level of biological activity from the whole content of the herb (enzymes and sensitive nutrients are often denatured by chemical extraction). Alkaloids present in Sceletium are well preserved through freeze-drying, as evident in US patented Sceletium extractions.

Ultrasonic extraction Machine	Emulsion of herbal powder

NOTES:
ZULTEST extract is a proprietary blend of testosterone boosting ingredients designed specifically for African Wild Naturals and is sold exclusively under the brand name ZULUTEST TM in partnership with Afrigetics cc.

This information has been checked and approved by Mr S.L Hurt, director at Afrigetics cc

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