

Rock Resinator (RSN8) Testing for Efficacy in Increasing Essential Oils & Resins in Scotch Spearmint

For Rock Nutrients Study Conducted By Erik Biksa (AG-Dip.)

Section IV-Extraction via Direct Steam Distillation

Essential Oil Extraction Process As per Section II (Grow Journal Study) & Section III (Harvest&Curing) accompanying this submission, the following Section IV outlines the procedure followed to determine the the water soluble essential oil and resin content(s) from TEST and CONTROL Scotch Spearmint cultivated, harvested and cured as outlined and supported with photo images.

To obtain homogeneous samples of Each TEST and CONTROL Spearmint samples, a portion of each CONTROL and TEST from all of the individual container plants harvested, dried and cured through the process to produce the plant material for extraction (ie TEST Single 5 Gal #2, TEST Group 10 Gal #1, etc to obtain a sample) was gathered previous and stored in freezer bags in the drying and curing area.

Careful attention was provided to ensuring representative stem to leaf contents in both TEST and CONTROL plant material for Extraction #2 until a dry weight of 100 grams of Each TEST and CONTROL material of similar stem to leaf/flower ratio was amassed.

The scale used is near accurate to within 1 gram, and a glass measuring bowl was deducted as tare weight to simplify photographing supporting data with this submission.

A trial extraction was performed on April 24th, 2014 upon receipt of the 2L Direct Steam Distillation Essential Oil Extractor to familiarize the operator with the distillation apparatus. Both TEST & CONTROL plant material samples were extracted for their essential oil content exactly as carried out in the Final Extraction Procedure(s) (Extraction test #2, April 25th, 2014) with one difference, in that the entire procedure from ON time to COLLECTION of water soluble essential oils extracted in the replicated process was timed to 70 minutes. The heat source was shut off after 50 minutes of operation, and allowed an additional 20 minutes for any additional condensate or oils to collect during cooling.

The first extraction process (Extraction #1) conducted to become familiarized with the system and procedure, demonstrated that no significant gains in essential oil volume or mass to collect was gained past this point-over 120 minutes had been the previous time frame required from ON to COLLECTION using the direct steam essential oil distillation apparatus. The TEST sample produced significantly more essential oil yield versus CONTROL in Extraction #1. In Extraction #1, both samples from TEST and CONTROL plant materials weighed 116 grams, while 100 grams was chosen for Extraction #2 to simplify noting the ratio of essential oil yielded as a percentage.

Demineralized water was used in both the capture vessel where the oil is collected and poured from on final collection and was also added to the boiling flask, to produce pure water vapour to 100 Degrees C, as the system operates under atmospheric pressure and was set-up very near sea-level in elevation (French Creek-Vancouver Island, BC, Canada). 32 OZ of demineralized water was added to the boiling flask and capture vessel in each extraction performed. The system was scrubbed clean with soapy water, rinsed thoroughly and wiped clean between each extraction performed.



rack-dried spearmint april 18 2014



dried spearmint april 18 2014



close up trichomes-dried spearmint april 18 2014



2L-direct-steam-distillation-setup-extraction #2-100gm-TEST-materia



1

spearmint-test-extraction #2-100 grams tare weight-dried



extraction #2-100gm-TEST-material-total collection volume-042514-EB



spearmint-control-extraction #2-100 grams tare weight-dried



extraction #2-100gm-CONTROL-material-total collection volume-042514-EB