Extraction of Blue Essential Oil from German Chamomile
("Matricaria Recutita")

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Steam distillation is an expensive method of extracting the blue oil from German chamomile due to the heavy steel equipment required to withstand high pressures due to superheated steam. The use of combined SE-CD is less expensive than steam distillation and also avoids the problem flowers compacting together in the standard clavenger method. The main objective was to extract the essential oil from the flowers using SE-CD and compare the yield when cold extraction is done using different solvents.

Samples, of ground chamomile flowers were mixed with distilled acetone in a conical flask, and kept un-agitated for eight days after which the organic extract filtered was concentrated and subjected to clavenger distillation for six hours. The procedure was repeated using distilled solvents of hexane, hexane:acetone, ethylacetate, DCM and methanol. Another sample of ground flowers was subjected to direct clavenger under the same conditions. The blue oil obtained from both Solvent Extraction Clavenger Distillation and direct clavenger was purified via preparative TLC and thereafter analyzed by TLC, UV-VIS Spectroscopy and Gas Chromatography. Purification of the essential oil was done on preparative TLC. The oil extracted via both methods had the same color. The DCM extract gave the highest yield while the hexane extract gave the lowest yield of the blue essential oil.

The UV-VIS analysis showed a strong absorption in the range 200-400nm. Acetone gave the least number of spots on TLC while both hexane: Acetone and pure chamomile samples gave the highest. Methyl-8-(2-hexyl-5,6-dihydro-2H-naphthalene-4a-yl)octanoate, Bisabolone oxide A(C15H26O2) (-)-(1s,3s,6s)-tetrahydro-2,2,6-trimethyl-6-94-methyl-3-cyclohexene-1-yl)2H-pyran(e)-3-ol and 1,6-Dioxaspiro[4,4]non-3-ene, 2-(2,4-hexadinylidene) were some of the compounds identified via Gas Chromatography analysis. Some components were however not detected and this might probably be as a result of decomposition during the concentration step. Visually, the blue oil changes to oil sine it's highly photosensitive and should therefore be stored in the refrigerator. Non-stoppage of distillation process, absence of organic solvent in the distillation flask, quantity of flowers used, temperature directly affects the yield of the essential oil. Also, distillation should not be done under reduced pressure. Further research should be done
to establish changes in concentration of matricine (present in the blue in future) with time in future.

*Key Words*: German chamomile, Solvent Extraction Clavenger Distillation, UV-VIS Spectroscopy, Thin Layer Chromatography and Gas Chromatography