

Studies on Egyptian vetiver oil

Ahmad Al-Badry Ebrahim Marwan

This work was carried out to study the effect of some factors on the yield of Egyptian distilled oil and extracted vetiver concretes and their absolutes by benzene and n-hexane, and their characters. The obtained results could be summarized in the following:

- (1). The yield of oil from roots of 2 and 3 years age showed nearly the same percentage, as it was 0.507 and 0.498% respectively, which is nearly 5 times of that from those of 1 year age which reached only 0.114%.
- (2). Oils from roots of 2 and 3 years age were nearly of close physical and chemical characteristics showing higher refractive index, specific gravity, optical rotation, acid value and ester value than those of oil from roots of 1 year age.
- (3). The concentrations of two from the identified major constituents namely, M+218 and five 220 (Sesquiterpenoids) increased in oils produced from 2 and 3 years age, while these of M+202 and 222 roots are lower. The sesquiterpene hydrocarbons (M+204), on the other hand, are almost of the same concentration in the three oils.
- (4). The odour of oils produced from roots of 2 and 3 years age were significantly better than those produced from roots of 1 year age.
- (5). The yield of oil increased gradually after roots storage for 1 month before distillation, as it reached 0.145%, multiplied nearly twice after storage for 5 months as it reached 0.273%. The maximum oil yield was obtained after storage for 6 months before distillation, hence it amounted to 0.507%.
- (6). The refractive index fluctuated in oils obtained from roots stored for different periods before distillation, while specific gravity, optical rotation, acid value and ester value showed higher values in oil from roots stored for 6 months before distillation.
- (7). The contents of the sesquiterpene hydrocarbons + (M 202 and 204) were significantly changed as a result of roots storage for different periods before distillation. Those of M+202 decreased gradually till storage of 4 months, then increased gradually till the last storage period. No significant differences occurred among the compounds of M+218 and 220. Generally, significant differences in the sesquiterpenic alcohol M+Z22 could be content of the detected between the oils obtained from roots stored for different periods before distillation.
- (8). The odour quality of oil obtained from roots stored for 6 months was significantly better than those produced from roots stored for other periods.
- (9). The oil yield increased gradually corresponding to increase of roots thickness, hence the oil content was; 0.093, 0.129 and 0.529% from roots of thickness less than 0.2, 0.2-1.3 and more than 1.3 mm, respectively.
- (10). There is no effect of roots thickness on the refractive index of oils. However, the specific gravity and optical rotation were significantly affected. They were the higher in oils obtained from roots of thickness more than 1.3 mm. Oils from roots of medium thickness (0.2-1.3 mm.) had the higher acid and ester values, but those of thickness more than 1.3 mm. had the lower ones.
- (11). The percentages of the sesquiterpenic hydrocarbons (M+202 and 204) were affected significantly by the thickness of roots. They were the highest in oil obtained from thick roots (11.79 and 9.35%) and decreased gradually with decrease in roots thickness (7.29 and 3.50%), (5.53 and 2.41%) in oils from medium and thin roots respectively. The two namely those of M+218 and identified 220 had constituents the higher concentrations in the oil obtained from roots of thickness 0.2-1.3 mm, while its content in the oil from roots of thickness less than 0.2 mm, represents the lower. The concentrations of the sesquiterpenic alcohol M+222 in oils from roots of thickness more than 1.3 mm, and 0.2-1.3 mm, were about the same, being completely absent in oil obtained from roots of thickness less than 0.2 mm.
- (12). The odour of oil obtained from thick roots (more than 1.3 mm.) was better than that of the other two oils.
- (13). The oil content increased proportionally with the increase

in distillation pressure as it was 0.118, 0.458, 0.505, 0.510 and 0.684% under 1, 1.5, 2.0, 2.5 and 3.0 atmospheres absolute pressure respectively. (14). Refractive indices of oils produced under 1.0 and 1.5 atmospheres absolute pressure were nearly the same, as they were 1.5222 and 1.5229 respectively, which represent the lower values than those produced under other pressures. The specific gravities of oils increased gradually with the increase of distillation pressure till 2.0 atmospheres absolute pressure, then decreased to about the same values under 2.5 and 3.0.