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Chemistry. — "*On the essential oil from Ocimum Basilicum L.*"

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In the Botanical Gardens at Buitenzorg are cultivated three varieties (?) of *Ocimum Basilicum L.* which, although containing essential oils of very different composition, seem not sufficiently to differ from a botanical point of view to make different species of them. The natives call them by the names of Selasih hitam, Selasih hijau and Selasih Mekah (or S. besar).

The oil from the first one, which has dark-green leaves, has been prepared by me many years ago, the yield is, however, very small so that the material for a more extended investigation is still wanting.

As regards the oils of the two others, some preliminary communications will be made here.

From the variety Selasih hijau, which is distinguished from the previous one by a light-green leaf, 0.2 percent (of the fresh herb) of an oil with a fennel-like odour is obtained by distillation with steam; this was investigated jointly with Dr. TROMP DE HAAS.

The specific gravity of this oil was 0.948 at 25°. On distillation the greater portion passes over between 214°—218°. Analysis and vapour density point to a substance of the composition $C_{10}H_{12}O$.

On treatment with alcoholic potash, anethol is produced whilst on oxidation with chromic acid, anisic acid is formed. The said properties lead to the conclusion that the chief constituent of this oil is methylchavicol, which has been found by DUPONT and GUERLAIN¹⁾ in French-, and by BERTRAM and WALBAUM²⁾ in German-, and Réunion-Basilicum-oil.

In the lower fractions of the essential oil the probable presence of pinene could be ascertained.

From the fresh leaves of Selasih besar, I obtained 0.18—0.32 percent of an oil which possessed a strong odour of eugenol; the varying quantity probably depends on the age of the herb and to some extent on the duration of the distillation. Both the specific

¹⁾ Bull. Soc. Chem. III, 19, p. 151.

²⁾ Archiv d. Pharm. 235, S. 176.

gravity and rotatory power varied with different samples (sp. gr. 0,890—0,940; rotation in a 200 m.m. tube $-22^{\circ}.5$ to -36°).

The amount of eugenol varied from 30—46 percent.

The liquid remaining after removing the eugenol by dilute aqueous soda boils at 170° — 250° , but its lower fraction cannot be separated at the ordinary pressure by fractional distillation as this alters its properties, which further investigation has shown. It may be readily isolated by treating the original oil with steam. One third part then readily passes over. A little eugenol which has been carried over is removed and the liquid distilled in vacuo. As chief product is then obtained a very agreeably smelling, optically inactive liquid which boils at 21 m.m. pressure at 73° — 74° . The specific gravity is low, namely 0,794 at 22° and 0,801 at 15° , whilst the index of refraction was found $n_D = 1,4861$. Analysis and vapour density (according to HOFMANN) agrees with a substance of the composition $C_{10}H_{16}$. This substance to which I will give the name of *Ocimene* eagerly absorbs oxygen and then resinifies. If, for instance a little is introduced into a tube filled with oxygen and inverted over mercury, this is soon observed to rise and gradually fill the tube. On heating at the ordinary pressure, the boiling point, which is at first situated at 176° — 178° , is gradually raised and after a few hours boiling under a reflux condenser in an atmosphere of carbon dioxide a liquid is obtained which boils at 195° at the ordinary pressure (at 93° at 25 m.m.), has a somewhat higher specific gravity and shows a stronger refraction¹). A portion of the original liquid has, moreover, been converted into a product boiling at about 250° .

In its properties, this low-boiling liquid reminds of myrcene, isolated by POWER and KLEBER from Bay-oil, a so-called olefinic terpene (boiling point 67° — 68° at 20 m.m.; sp. gr. at 15° 0,8023, $n_D = 1.4673$) which, however, as I convinced myself is distinguished from the same by its behaviour towards oxygen²).

I am still engaged with the study of these substances, also of a product with a higher boiling point from Selasih besar, which is probably a sesquiterpene.

¹) A preliminary determination gave $n_D = 1.5361$.

²) KLEBER and POWER, (E. GILDEMEISTER und FR. HOFFMANN „Die aetherische Oele“ S. 668), state that myrcene gets polymerised after a week. I did not find this observation confirmed, for I could keep unaltered for months a specimen prepared by me from Bay-oil, kindly presented to me by the well-known firm of SCHIMMEL & Co. of Leipsic.

(January 23, 1901.)