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METHOD OF PRODUCING ARTIFICIAL COFFEE AROMA.

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The subject matter of the present invention is a method of artificially producing the aroma of coffee by mixing substances known to be contained in the ethereal oil of roasted coffee or substances similar in action, either artificially produced or extracted from natural products, and also the application of the obtained products to impart the aroma of roasted coffee to other substances.

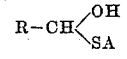
In spite of numerous and costly experiments the substances which are of importance for the production of the aroma are not definitely known. Up to the present the following substances have been determined in the aroma, i. e. in the so-called coffee oil and in the roasted products respectively: pyridine, furfur-alcohol, furfurol, maltol, acetone, acetic acid, valeric acid, which has been taken for methyl-ethyl-acetic acid, further quinol and phenols having the odour of creosote, i. e. substances which singly or in mixture produe no coffee aroma.

E. Erdmann considered a colourless oil containing nitrogen with a boiling point of 93° at 13 millimetres pressure to be the characteristic odoriferous substance of the aroma, whilst Bernheimer believed derivates of phenol, the so-called caffeol, to be the bearer of the odour. The presence of the following substances was assumed: pyrrol, furfurane, trimethyl-amine and methyl-amine, formic acid and resorcinol.

A novel method of isolating the aromatic principle contained in roasted coffee has been invented, see patent application Ser. No. 80,351, filed Jan. 9, 1926, and according to which large quantities of the aroma have been produced and analyzed. The result of this was that coffee oil consists of a mixture of a great many different substances; the most important substances have been isolated and identified and the desired knowledge of the composition of the aroma has thus been gained. The following compounds have been ascertained in the aroma: hydrogen sulphide, methyl-mercaptan, furfuryl-mercaptan and higher mercaptans, dimethyl-sulphide and higher sulphides, acetaldehyde, methylethyl-acetaldehyde, furfurol, methyl-furfurol, acetone, higher aliphatic aldehydes and ketones, ketones of the furane series, diacetyl- and acetyl-propionyl, oxy-sulphides and mercaptales of carbonyl compounds with the above mentioned mercaptans, methylalcohol, higher aliphatic alcolhols, acetol, furfuryl-alcohol, acetic acid, isovaleric acid and higher fatty acids, palmitic acid, esters of the former two acids with the mentioned alcohols, phenol, catechol, guaiacol, vinylguaiacol, 2,3-dioxyacetophenone, further phenols and phenol ethers of a higher valence, maltol, pyridine, pyracine, methyl-pyracine, 2,5 and 2,6 dimethyl-pyracine, higher homologues of pyracine, N-methyl-pyrrole, N-furfuryl-pyrrole, further higher pyrroles and derivates of furane and finally naphthalene.

These substances are to be found in the aroma of coffee in varying proportions and this explains the well known fact that the aroma of coffee widely varies in accordance with the kind of coffee and the method of roasting. A synthetic aroma may be produced by mixing together all the above mentioned substances, which may be obtained synthetically from other substances or from natural products; analogues and homologues may also be used.

The further research showed that some of the substances are of special importance for producing the aroma and in opposition to the old hypothesis these substances are not the phenols nor nitrogen compounds but fugitive sulphurous compounds of the mercaptan series of the general formula ASH or derivatives thereof, particularly oxy-sulphides of the formula



which may be obtained from carbonyl compounds, aldehydes, ketones and diketones with the above mentioned mercaptans.

It is to be observed that like or similar effects as those produced by the sulphur compounds found in the aroma of coffee may be obtained by synthetically manufactured products which are of a similar structure although not present in the natural aroma, for instance the particularly important furfuryl-mercaptan may be replaced by thienyl-mercaptan or benzyl-mercaptan; disulphides also show a similar effect.

The aroma is produced by an addition of the above mentioned sulphur-compounds, either singly or in mixture, to the other oxygen containing and nitrogen containing