Biochemical studies on some aromatic oils

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The essential oils of three spicy plants, (parsley, dill, and laurel) were extracted by steam distillation. The different parts of plants were collected from the farm of aromatic and medicinal plants. The different parts of plants were collected from the farm of aromatic and medicinal plants. All the essential oil samples were produced from the crude parts by steam distillation.All the oil samples were dried over pure anhydrous sodium sulphate (120-150 g/kg oil). The mixture was first allowed to stand at room temperature for 24 hours and then filtered through ordinaryfilter paper.The obtained oil samples were kept in washed cleaned and dried brown glass bottles and were completely filled by the oil. The bottles were stoppered carefully and were tightly sealed by molten wax. The bottles were stored in 5°C in order to preserve the physical and chemical properties. The following tests were carried out:[1]The percentage of essential oil of parsley, dill, and laurel were determined and they were 0.8, 1.2, and 1.75, respectively.[2]The physical properties (specific gravity at 15°C, refractive indexat 20°C, optical rotation and solubility in alcohol) of each oil were as follows:Parsley oil: 0.8892, 1.4842, -3° and soluble in (1) volume of 75% ethyl alcohol.Dill oil: 0.8950, 1.4822, + 75° and soluble in (3) volumes of 80 % ethyl alcohol.Laurel oil: 0.9240, 1.4656, -18° and soluble in (4) volumes of 9040 ethyl alcohol .[3]The chemical properties (acid number, ester number, and ester number after acetylation) of each oil were as follows:Parsley oil: 1.5, 10.2 and 20.8.Dill oil: 0.8, 33.6 and 78.3.Laurel oil: 5.6, 22.9 and 42.4.[4]The chemical composition of the essential oils were determined by gas liquid chromatography and the main components of these oils were myristicin 24.44% (parsley), phyllandrene 23.00% (dill) and cineole 33.3% (laurel).[5]The essential oils were tested for antimicrobial activity by using filter paper disc diffusion method and the results were asfollows:a)All tested essential oils had antibacterial activity against growth of Gram-negative and positive bacteria. Laurel oil had the highest effect while parsley oil had the lower one. The Gram-positive bacteria were more sensitive towards the tested essential oils than Gram-negative ones.b)All tested essential oils had antifungal activity against growth of fungi and yeast under study. Laurel oil had the highest effect while parsley oil had the lowest one. The tested yeasts were more sensitive towards the essential oils under study than fungi. According to the minimumconcentration (MIC), the inhibitory effect of the oils followed the sequence: laurel> dill > parsley, the MIC towards fungi and yeast metabolism for the oils were exactly the same.[6]Antioxidant activity of the essential oils were determined by mixing cottonseed oil with different amounts of parley, dill, and laurel oils followed up by the determination of their stability time, peroxide number, TBA value, refractive index and specific gravity. In order to compare the antioxidant activity of such oils, 100 ppm of BHA and BHT were added separately to cottonseed oil. The obtained data showed that all oils had antioxidant activity and the effect was increased by increasing oils concentration from 200 to 1400 ppm. Laurel oil had the highest antioxidant activity than the two other oils and the synthetic antioxidant BHA and BHT, while parsley oil had the lowest one. There was a relationship between the antimicrobial and antioxidant and chemical composition of the essential oils.[7]The addition of parsley, dill and laurel essential oils to cottonseed oil, as an antioxidant or antimicrobial agents, did not alter the acceptability of cottonseed oil used for processing food.