CHROMATO MASS SPECTROMETRIC ANALYSIS USING MINT ESSENTIAL OILS

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https://doi.org/10.5281/zenodo.7567652

Annatation: The accumulation of experimental material on a certain divided chromatomass spectrometric contributes to a more accurate interpretation of the analysis results, since the combination of mass spectral data with chromatographic characteristics taken into account allows determining the chemical composition of the samples under study with a high degree of reliability.

Key words: The accumulation, experimental material, chromatomass spectrometric, interpretation of the analysis results, since the combination of mass spectral, determining the chemical composition

INTRODUCTION

Mint, one of the oldest known medicinal herbs, was highly valued in ancient Greece and Rome. It was believed that the mint smell lifts the mood, improves the work of thought. It was recommended for internal bleeding, diseases of the gastrointestinal tract, headaches. Currently, mint, its extract and essential oil are widely used for food and medicinal purposes. Mint essential oil is used in the perfumery and cosmetic industry in the production of creams, colognes, elixirs, toothpastes and powders to give them freshness and bactericidal properties. Mint is flavored with tobacco, chewing gum, tea, confectionery, syrups. Mint preparations are also widely used in medicine, as they have a refreshing, antispasmodic, sedative, expectorant, choleretic, antiseptic and anesthetic effect. The mint genus has about 50 species. All of them have a characteristic aroma, but peppermint has a stronger one. The main carrier of the aroma of peppermint oil and its physiological active component is menthol and its derivatives. Menthol, when applied to the skin or mucous membrane, excites cold receptors and causes a feeling of cold. The essential oil of meadow mint, or Japanese mint (Mentha arvensis L.), also contains menthol, but in much smaller amounts than in the oil of cultivated hybrids and varieties of peppermint[1-10].

Figure-1.

METOD AND RESULTS

Peppermint is a perennial herbaceous plant with a height of 50-80 cm of the Labiaceae family (Lamiaceae figure-1). There are two varieties of peppermint: "white" – with green stems and "black" — with red-brown stems (Mentha piperita L .). The leaves are petiolate, oblong or ovate. The tops of the main stem and side branches end in spike-shaped inflorescences. The flowers are small, mostly sterile, the corollas are purple pink or red purple. Peppermint is a cultivated hybrid of water mint (Mentha aquatica L.) and spearmint (Mentha spicata L.) – rarely gives seeds and propagates vegetatively by rhizomes and layering The essential oil content is 1.5–2% per dry.

When processing raw materials by hydrodistillation, the essential oil content in the inflorescences is 4-6%, in the leaves – 2.4–2.7, in the stems – 0.1–0.3%. Essential oil co" holds 45-65% menthol. Mint essential oils obtained by steam distillation from dried crushed raw materials are a yellowish liquid with a characteristic taste and smell of mint. Mint essential oils are widely used as an ingredient to create aroma-forming compositions. Peppermint essential oil has a high menthol content. Unlike peppermint, not menthol, but carvon is the main component of the essential oils of curly, ordinary or ear mint. In addition to the main component, mint essential oils contain a large amount of organic substances, and the content of each compound can vary quite widely even for plants of the same species, which depends on the place of cultivation and climatic features, harvesting time and vegetation stage, duration and storage conditions of raw materials. Since the chemical composition of the essential oil depends on many factors and is not constant, the usual physical and chemical parameters are insufficient to standardize these ingredients, therefore a more detailed study of the qualitative and quantitative composition is required.

In chromato-mass spectrometric analysis of essential oils, in some cases, the mass spectra are not absolutely characteristic.

THE EXPREMENTAL PART

The accumulation of experimental material on a certain divided chromatomass spectrometric contributes to a more accurate interpretation of the analysis results, since the combination of mass spectral data with chromatographic characteristics taken into account allows

determining the chemical composition of the samples under study with a high degree of reliability. Thus, carrying out chromatographic mass spectrometric analysis of essential oils is like taking "fingerprints". This makes it possible to determine not only the chromatographic profile of the essential oil, but also simultaneously identify the components contained and quantify the differences in the concentration of these components compared to the control sample. Since it is the changes in the chemical composition of the ingredients that lead to differences in the organoleptic parameters of the finished product, thanks to the accurate information obtained as a result of chromatomass spectrometric analysis of samples of the raw materials used, it becomes possible to quickly and effectively correct the formulation in the production of aroma-forming compositions.

The possibility of rapid monitoring of the chemical composition of essential oils by chromato mass spectrometry is demonstrated by the example of the study of various samples of mint essential oils. Based on the results of the analysis of the chemical composition of essential oils, the type of raw materials from which each investigated essential oil was produced was determined. The information obtained makes it possible to quickly and efficiently carry out an examination of the identity of the supplied raw materials in comparison with control samples, which is a necessary step in the production of aroma-forming compositions using essential oils to obtain products with certain organoleptic characteristics.

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