Materials of Conferences

ABOUT EXPLANATION OF ELABORATION OF ESSENTIAL EREMOTHECIUM OIL BIOTECHNOLOGY

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One of the high-priority directions of scientific and technical progress is an expansion of the world assortment of natural essential oils produced by industry – which is currently counted to be around 180 names, that which are widely used in pharmaceutical, perfumery, cosmetic, confectionary, soap, alcohol beverage and other productions. The revelation of perspective producers is an actual goal in modern biotechnology of aromatic products, in addition to including the scent of fresh rose flowers. However, the biotechnology of essential oils production in culture of isolated cells and tissues is not capable of competing with the biotechnology based on the microbial synthesis. The estimation was carried out by analysis of accumulation level and composition of essential oil, speed of culture growth and other properties which are important for biotechnological production [1-4]. In addition, nowadays it is worth paying attention to the investigation of mechanisms of aroma forming substances synthesis and the increasing clarification of metabolic methods of influencing this process [5, 6].

The aimed search of perspective objects for aromatic products in biotechnology in the range of genera *Ceratocystis* and *Eremothecium* gives the possibility to characterize differences between species, strains by level of biosynthetical activity and essential oil composition. The component compound of essential oil of *Ceratocystis paradoxa* and *C.pilifera* is presented by lactones, terpene and aromatic alcohols, aldehydes, and ketones. The basic components of *E.ashbyi* essential oil are geraniol, β-phenylethanol, and nerol, citronellol, neral and geranial were also observed. Geraniol, β-phenylethanol and other compounds of essential oil possess anti-inflammatory and antiseptic action [7]. The essential oil synthesized by *E.ashbyi* closely resembles the functions of the essential oil of fresh rose flowers due to its composition and has a scent. The essential oil synthesis reaches 180 mg/l cultural liquid during first two days of growth in fermentative medium. This can be comparable with that of the essential oil content in 500-600 g of rose flowers [2, 3]. The component composition of essential oil of *E.gossypii* is similar, but the monoterpene alcohols ratio is closer to their content in Bulgarian rose oil. This natural product, whose price on the world market reaches eighty dollars for one gram, is in extreme demand. As more than half of world perfume brand production are based on rose oil. It is also used in medicine and pharmaceutics. The rose oil possesses moderately antibacterial (bacteriostatic) effects, because β-phenylethanol inhibits macromolecules synthesis, but is not toxic for all microorganisms and strains at the same degree [8]. Its efficiency is compared against a wide range of bacteria, fungi, viruses. The increases of the causative agent's sensitivity to antibacterial medicines are marked by their complex administration. The oil is used as a corrigant of pharmaceutical products for their olfactory and gustatory improvement. The rose oil regulates the adrenal work, possesses antipyretic, is anti-inflammatory, is anti-edematous, is choleretic, hepatoprotective action and is used in the treatment of stomatitis, parodontosis, cutaneous and other diseases. The essential oil causes stimulatory or sedative effects on the central nervous system, apparents immunomodulatory action, or regulates oxidative processes in the organism.

The rose oil accounts for 0,025% of composition on average, so for production of 1 kg oil the manual collection and processing of around 4 tonnes of petals is necessary. The rose water remains after oil distillation while oil accounts for 0,02% of its composition. The main supplier of rose water in the world market is Iran, but the oil is not produced there. In the world, rose oil of good quality and volume – which is nowadays around 600 kg/year – is produced just only in four countries: Taif, Saudi Arabia; Kazanlyk, Bulgaria; Istanbul, Turkey; and the Tashkent region, Uzbekistan [9]. Until 1992, the rose oil production by hydrodistillation method in USSR republics (Ukraine, Moldova, etc.) was around four tonnes per year. But since then, it has sharply reduced due to the economical crisis in CIS countries [10]. For instance, in 2005, in Crimea, only 600 kg rose essential oil (extract) was produced. That is less than maximal levels reached in this region by a factor of two [11].

Thus, the comparative analysis of cultures of microorganisms, which are referred to different taxonomic positions, shows that the quantity of synthesized volatile aromatic substances is high enough, and these bio-objects possess the highest growth speed that simultaneously offers them an advantage and increases product outcome yield on useful equipment units. This, now, permits the acknowledgement of the elaborate traits of essential oil, Eremothecium, as a perspective.

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