Development of an effective method for separation of crystalline licopene from herbal dried raw materials

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Lycopene is the most powerful antioxidant carotenoid in the human body, the main role of which is the antioxidant function. Contributing to the decrease of oxidation stress it detains the progress of atherosclerosis. And as a result of some tumor diseases examination (prostate, stomach and lung) scientists have come to the conclusion that the possibility of their progress is inverse proportional to the percentage of lycopene content in the blood [1-3]. Lycopene is also guaranteed to be used as a biologically active additive in pharmaceutical and cosmetic industry [4]. The human body receives the needed portion of lycopene from the consumed food and it is not always that it satisfies the daily minimal needed dose (2.5-2.8 *mg*). There is a biotechnological way of obtaining lycopene from biomass of the fungus *Blakeslea trispora,* but it is a long lasting process (4-7 day) and it is impossible to fully stop the biosynthesis during the stage of lycopene obtaining; moreover, the separation and purification of lycopene from biosynthesis products is multi-stage and difficult.

Although the extraction method is considered to be more expensive than the biotechnological one, it is predominant today for the production of lycopene; thus, the search for a highly efficient extractant and development of new and effective methods for obtaining a target product with quantitative yields (> 90 %) are quite urgent.

As a result of extensive experimental research, by using CH_2Cl_2/C_2H_5OH = 3/1 extractant, an effective (> 93%) method for crystalline lycopene production from the dried raw materials of Armenian tomatoes and red peppers has been developed. The purification of lycopene from accompanying carotenoids was performed by preparative chromatography and for identification of the structure ^1H NMR method was used.

References

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