

PECULARITIES OF MICROBIAL EXOPOLYSACCHARIDE ETHAPOLAN SYNTHESIS ON VARIOUS OIL-CONTAINING SUBSTRATES

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Microbial exopolysaccharides (EPS) due to the ability of their solutions to gelation, emulsification, suspending and changing rheological properties of aqueous systems are widely used in various industries, agriculture and medicine. The vast majority of known microbial EPS are obtained from carbohydrate substrates. Last years the researches of using industrial waste have been activated to obtain a practically valuable microbial metabolites. Oil-containing waste are promising for using in microbial technologies. Previously, we have established the possibility to use sunflower oil as a source of carbon and energy for the synthesis of microbial polysaccharide ethapolan by *Acinetobacter* sp. IMV B-7005. The purpose of this work – to research refined oil replacing on waste (fried) one for the strain IMV B-7005 cultivation.

Acinetobacter sp. IMV B-7005 was carried out in a liquid mineral medium of such composition (g/l): KH_2PO_4 – 6.8; KOH – 0.9; $\text{MgSO}_4 \times 7\text{H}_2\text{O}$ – 0.4; $\text{CaCl}_2 \times 2\text{H}_2\text{O}$ – 0.1; NH_4NO_3 – 0.4; $\text{FeSO}_4 \times 7\text{H}_2\text{O}$ – 0.001. Refined, unrefined sunflower oil and waste oil after frying meat or potato (5%, v/v) were used as a sources of carbon and energy. In additionally yeast autolysate (0.5%, v/v) and multivitamin complex "Complevit" (0.00095%) were added to the medium as growth promoter and source of pantothenate, respectively. In additionally yeast autolysate (0.5 %, v/v) and multivitamin complex "Complevit" (0.00095 %) were added to the medium as growth promoter and source of pantothenate, respectively.

Culture from the exponential phase, grown in the medium with 0.5 % of sunflower oil was used as the inoculum. Quantity of inoculum was 10 % from the volume of the medium. Cultivation of *Acinetobacter* sp. IMV B-7005 was carried out in flasks (750 ml) with 100 ml of medium in shacker (320 rpm) at 30 °C for 120 hours.

We have established that amount of synthesized EPS in the medium which contained unrefined sunflower oil and waste oil after frying meat was 15.5 and 14.4 g/l respectively, that is in 1.2 times higher under *Acinetobacter* sp. IMV B-7005 cultivation on refined sunflower oil. At the same time parameters of ethapolan synthesis on waste oil after frying potato were the lowest: the concentration of EPS and EPS- synthesizing ability didn't exceed 4.2 g/l and 2.8-3.3 g EPS/g biomass, respectively. In these studies, inoculum was grown on refined oil regardless of the oil type used for cultivation, as it gave better results. And only indices of ethapolan synthesis in the medium containing waste oil after frying potato were increased to 8.1 g/l with using inoculum grown on the same substrate.

Thus, this work shows the possibility of replacing refined sunflower oil in a medium on unrefined and waste oil after frying meat or potato to produce exopolysaccharide ethapolan. The synthesis dependence on the method of inoculum preparation were also shown.