yogurts. No observable changes were noticed in pH and lactic acid (LA) activity of all yoghurts during storage time. Results also showed that the DPPH-radical-scavenging activity (95.28 %) in symbiotic yogurt containing *Bifidobacterium* with 0.15 % SO-β.G was significantly higher ($P < 0.05$) in comparison with that of control yogurt. However, the usage of β-D-glucan different types, such as SO-β.G and EO-β.G, gave significant differences in the properties of yoghurt especially in its syneresis, the number of viable cell and the appearance of yoghurt samples.

CONCLUSION. Overall, the addition of oat bran β-D-Glucan to standardized milk to make enriched symbiotic yogurt have resulted in a product of acceptable physicochemical and sensory properties. It should be noted that yogurt samples containing 0.10 % SO-β.G or 0.20 % EO-β.G hydrocolloid composite were acceptable by expert panels and had scores similar to the control yogurt samples.

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BIOSENSORS FOR EARLY DIAGNOSTICS OF HEPATITIS C: PREPARATION AND PROPERTIES EXPLORATION*

Keywords: biosensor, Hepatitis C virus (HCV), HCV detection, molecular recognition, CD81 cell receptor, synthetic peptides, E2 envelope protein of HCV, screen printed electrode (SPE).

One of the serious social diseases is Hepatitis C virus (HCV), which can cause serious liver affection such as chronic hepatitis, evolving into subsequent health problems. The disease occurs with several stages, and the initial stage cannot be practically diagnosed. Therefore, the early diagnostics of hepatitis C represents an extremely important problem of modern public health care.

Development of biosensors for medical diagnostics is one of the rapidly growing areas of modern science. Biosensors are devices whose operating principle is based on biological recognition, namely on the ability of the analyte to form an affinity complex with a ligand immobilized on the surface of a transducer. Among them electrochemical biosensors represent a great analytical tool for real-time diagnostics due to the advantages of being miniaturized and portable, using small sample volumes and having good selectivity. They can be used as point-of-care devices for the detection and monitoring of different disease marker.

This work is aimed at the development of a biosensor for direct detection of HCV. For creation of molecular recognition elements, a recombinant LEL fragment of biological cell receptor CD81 and its synthetic analogs (peptides imitating the fragment of LEL sequence of CD81 (linear and loop-like peptides)) capable of specific binding to HCV envelope protein E2 was applied. The molecular recognition elements were covalently integrated with a label-free screen-printed electrode (SPE) sensor platform via the carboxyl group-containing linker by means of EDC/NHS chemistry allowing to quantitatively evaluate the binding of HCV. Every stage of the sensor surface modification will be conducted by Differ methods. The optimal operating conditions for developed biosensors were chosen by varying of the concentration of solutions of the immobilized ligand and analyte as well as time of complexation. To check the performance of the prepared biosensor, the binding of free E2 protein as well as Hepatitis C virus-mimetic particles (HC VMPs) were studied and compared. The assay system was able to detect E2 protein at a minimum concentration of 0.001 mg/mL with a good inter-assay reproducibility. Moreover, high sensitivity and specificity for the analysis of E2 protein and HC VMPs both in 0.01M PBS solution (pH 7.4) and in simulated blood plasma was demonstrated.

Moreover, the developed electrochemical method for detection of E2 protein has several practical advantages: obtained biosensor uses only 5 μL of samples and fast generates electrochemical signal, does not require any tedious electrode surface functionalization and utilizes cheap and disposable commercially available screen-printed electrodes which provides good assay sensitivity, specificity and reproducibility. The use of electrochemical readout and disposable electrodes adds convenience and portability of the detection system at low cost.

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