EXPRESSION SYSTEMS FOR PRODUCTION OF RECOMBINANT PROTEINS

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The discovery of the restriction enzymes and the development of the polymerase chain reaction (PCR) made it possible to amplify a gene of interest and to clone it into an appropriate vector.

Both are common and well established techniques in research labs and the basis for gene expression of recombinant proteins.

For structure-determination methods like X-ray crystallography or for biochemical characterization, e.g. of newly discovered cold-adapted enzymes, a rather elevated amount of pure protein (> 95%) is needed. Unfortunately the production of recombinant proteins in prokaryotic or eukaryotic systems is not always straightforward. Some time has to be spent on optimization to get a sufficient amount of protein, preferably in soluble form to get around the longsome process of protein refolding. In some research labs it is already common practice to generate several constructs per protein and thus to test for better solubility in parallel, e.g. using different fusion tags or host systems.

An overview of available host systems, vectors and fusion tags will be presented. A number of examples will be given showing how each of these can be applied to increase the expression yield and/or solubility of the protein.

SUBSTANTIATION OF THE SHELF LIFE FOR THE FROZEN SOFT SALMON CAVIAR

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Salmon caviar, which has high taste and nutrient properties, represents one of the most valuable food substances.

It is known that the caviar quality during its storage depends on the observance of technological conditions during its preparation, sanitary conditions on the factory, type of packaging, storage conditions, and some other factors.

The salting and freezing are the traditional methods of the caviar preservation. However, until now the freezing of salmon caviar was not widely used. Therefore, in our opinion, the technology of freezing of the salmon caviar became relevant.

The purpose of our study was to substantiate the shelf life for the salmon caviar at –18ºC in the absence of any preservatives.

The object of our study was hunchback salmon caviar, prepared according to the State Standard 1629–97 (Soft salmon caviar) without any preservatives.

The sampling, preparation of the average sample, and determination of quality and safety parameters were carried out using the corresponding standard methods of study.

Caviar samples (1000 g each) were packed into polymeric bags, approved for the use with fish products, and stored at minus 18 ºC. The shelf life was determined according to the methodical recommendations of the State Sanitary and Epidemiological Inspection “Sanitary and epidemiological assessment of the substantiation of the shelf life and storage conditions for foodstuffs” (Methodical recommendations 4.2.1847-04).

The dynamics of caviar quality parameters during the storage was characterized by changes in the content of nitrogenous compounds (nonprotein nitrogen, nitrogen from volatile bases (NVB)) and oxyacids and in the values of lipid hydrolysis and lipid oxidation indices.

The organoleptic evaluation was carried out during the whole storage period by at least 2 experts, experienced in the field of the certification of fish, non-fish objects, and the corresponding food substances.