

ECTOINE – ANTI-STRESS MOLECULE OF THE FUTURE

Summary

Microorganisms occur in soil environments as well as in extreme environments, such as saline lakes, coal and salt mines. Their survival under unfavorable conditions is possible due to the presence of an osmoprotectant – ectoine. This compound prevents the cells from water loss and regulates their turgor without disturbing their metabolism. Ectoine is synthesized by microorganisms, in order to protect them against various types of environmental stresses such as UV radiation or heat stress.

Ectoine is a rare aminoacid, 1,4,5,6-tetrahydro-2-methyl-4-pyrimidinecarboxylic acid of amphoteric character. Nowadays ectoine has found wide appli-

cations in different branches of the industry. The increasing demand for ectoine led to a number of actions enhancing an efficiency of its biosynthesis compared to chemical technologies.

Ectoine is commonly used in medicine to protect healthy cells during chemotherapy and radiotherapy. It is also a very important compound in cosmetics as the component of moisturizers and products used for skin protection against UV radiation and prevention from its early photoaging. In molecular biology it is used for thermal stabilization of enzymes and nucleic acids, protein-DNA complexes and whole cells.