

Z. V. KAPSHAKBAEVA, A. N. KAMAROVA

FOOD BIOTECHNOLOGY



 TORAIGHYROV
UNIVERSITY

ПАВЛОДАР

Ministry of Education and Science of the Republic of Kazakhstan

Non-profit limited company «Toraighyrov University»

Z. V. Kapshakbaeva, A. N. Kamarova

FOOD BIOTECHNOLOGY

Tutorial

Pavlodar
Toraighyrov University
2021

UDC 60 (075.8)
LBC 30.16 я73
K20

**Recommended for publication by the Education and Methodological
Council of Non-profit limited company «Toraighyrov University»**

Reviewers:

Adamzhanova Zh. A. – candidate of Biological Sciences, Professor of
NPJSC Toraighyrov University;

Moldabayeva Zh. K. – candidate of Biological Sciences, Associate
professor of NPJSC Shakarim University of Semey city;

Igenbayev A. K. – PhD, senior lecturer of NPJSC Kazakh
Agrotechnological University named after S. Seifullin.

Kapshakbaeva Z. V., Kamarova A. N.

K 20 Food biotechnology : tutorial / Z. V. Kapshakbaeva, A. N. Kamarova.
– Pavlodar : Toraighyrov University, 2021. – 99 p.

ISBN 978-601-345-197-8

The textbook is compiled in accordance with the program of the
discipline «Food biotechnology» and is intended for students of the
specialty 6B05102 – Biotechnology, 6B072700, 6M072700 – Technology
of food production. It gives the basic terms and concepts in the field of
biotechnology, describes the processes of obtaining useful substances with
the help of microbial cells. The issues related to one of the most promising
and developing branches of this science – food biotechnology are
considered in more detail.

UDC 60 (075.8)
LBC 30.16 я73

ISBN 978-601-345-197-8

© Kapshakbaeva Z. V., Kamarova A. N., 2021
© Toraighyrov University, 2021

The accuracy of the materials, grammatical and spelling errors are the responsibility of
the authors and compliers

Food biotechnol
biotechnology gener
methods for testing
(water, soil, etc.) fr
obtaining new medic
of chemicals and oer
detergents and other
substances and comp

The following
biotechnology:

- creation of new
the dairy industry, as
- development o
used in food:

- using microorg
food industry – dairy
sausages, meat prod
- using waste m
industries (chemical,
media for cultivation

Thus, the devel
by the improve
biotechnological pro
food production proc
in the distant future,
of producing microo
rate of microorganism
areas: the possibility
selection, mutations,
preparations of diff
skillful use of mic
technological proces
fermentation technol
products and expand

Biotechnology
substances and pro
conditions, using m
structures isolated fr

Industrial mic

Z. V. Kapshakbaeva, A. N. Kamarova

FOOD BIOTECHNOLOGY

Tutorial

Technical Editor: A. R. Omarova
Executive Secretary: A.K. Shukurbayeva

Sent to the press 16.06.2021.
Font Times.
Format 29,7 x 42 ¼. Offset paper.
5,7 conventional printer's sheet. Circulation: 300 copies.
The order № 3784

«Toraighyrov University»
140008, Pavlodar, Lomov Street, 64