

Review

Water in Biological Systems

Hisashi UEDAIRA

Articles

1. Freezing of a Ternary Solution, Sodium Chloride-Ethanol-Water, and the Bactericidal Effect

Mituso TAKANO, Shin-ichiro HAZE and Isao SHIBASAKI

2. Injury to Respiratory System of Yeast Cells Caused by Freeze-Thawing

Hiroko SUZUKI, Yoki MORI and Tokio NEI

3. Freezing Patterns of Cells in Animal Tissues, with Special Reference to Comparison with Free Cells in Suspensions

Tokio NEI

4. Freeze-Preservation of Macrophage. II.

Masahito TADA, Makoto MURAKAMI, Yoki MORI and Tokio NEI

5. Calorimetric Studies on the Freezing Mechanism of Aqueous Solutions : —Freezing of Aqueous Solutions of Tetraalkylammonium Bromide—

Kinji GONDA, Yoshio KAWAI and Norio MURASE

6. Hydration of Myosin. I.

Naofumi HANAFUSA

7. Freezing Curves by Broad-Line Pulsed NMR: Relations to Freeze-Drying

Nobuya NAGASHIMA and Eiichiro SUZUKI

8. Measurements of Dried Layer Transport Properties During Freeze-Drying of Coffee Solutions

Yasuyuki SAGARA, Yoshiyuki TOSHIMA and Akira HOSOKAWA

9. Heat Stability of Ribosomes in Bacterial Spores

Yoshimi MAEDA, Yoshio KAWAI, Isamu YABE and Shozo KOGA

10. Effect of Water Activity on the Survival of Freeze-Dried Bifidobacteria and Lactic Acid Bacteria

Toshio TATEMATSU, Seiichi SHIMAMURA, Mamoru TOMITA and Shigeo OKONOGI

11. Presevation of Bacteria by L-Drying; Improved Media for Drying and for Rehydration

Takeshi SAKANE and Isao BANNO

12. Suspending Media in Freeze-Drying of *Pasteurella multocida*

Shigeru IWAMATSU, Yuichi OZAKI, Hiroyuki YUGI and Tokio NEI

Seminar on "Techniques for Maintenance of Biological Activities"

□. Maintenance of Microbial Productivity for Physiologically Active Substances:

• Maintenance by Various Preservation Methods of Productivity in Streptomycetes of Antibiotics and Other Physiologically Active Substances

Hiromi MARUYAMA

• Preservation of Streptomycetes with Special Reference to Antibiotic Productivity

Masa HAMADA

II. Maintenance of Pathogenic and Immunogenic Properties:

• Effect of Various Additives on the Stability of Freeze-dried Small Isometric Plant Viruses

Fumiyoshi FUKUMOTO

• Preservation of Bacterial Strains with Pathogenic Properties

Hiroshi CHOSA, Tadashi WATANABE and Sho-ichiro SATO

III. Protection of Cultures from Mutation during preservation:

• Compounds Protecting L-Dried Cultures from Mutation

Takeshi SAKANE, Isao BANNO and Teiji IJIMA

IV. Utilization of Preserved Biological Activities :

• Freezing Damage of Yeast in Frozen Dough

Yasuo TANAKA

• Immobilized Enzymes and Immobilized Microbial Cells

Tetsuya TOSA

• Maintenance of Acid-Producing Activity of Lactic Starter Cultures by Freezing and Drying

Toshiki MORICHI

V. Progress in Apparatus for Freezing and Drying :

- Recent Trend of Freeze-Dryers

Masakazu KOBAYASHI