

## CURRICULUM VITAE

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- 5) MARITAL STATUS:  
Michiko Kainuma, 2 Daughters: Mami, born 1964: Emi, born 1969:
- 6) EDUCATION AND POST-DOCTORAL EXPERIENCES:  
1959.3.Bachelor of Agriculture (Biochemistry), Tohoku University  
1968.3.Doctor of Agriculture (Biochemistry), Tohoku University  
1968.6-1970.6 Postdoctoral research associate under Professor Dexter French, Department of Biochemistry and Biophysics, Iowa State University, U.S.A.
- 7) RESEARCH AND PROFESSIONAL EXPERIENCES:
  - (1) National Food Research Institute, Ministry of Agriculture, Forestry and Fisheries (MAFF)  
1959-1973 Research Chemist  
1973-1983 Head, Carbohydrate Laboratory  
1983-1987 Director of Food Engineering Division
  - (2) Agriculture, Forestry and Fisheries Research Council Secretariat, Ministry of Agriculture, Forestry and Fisheries (MAFF)  
1987-1988 National Program Staff for Research and Development  
1988-1990 Director of Biotechnology Division  
1990-1991 Deputy Director General, Research Council Secretariat  
1991-1993 Director General, Research Council Secretariat
  - (3) Tropical Agricultural Research Center, MAFF  
Director General, 1993.7-1993.10
  - (4) Japan International Research Center for Agricultural Sciences, MAFF  
Director General, 1993.10- 1996.8.
  - (5) Bio-oriented Technology Research Advancement Institution  
Vice President, 1996.10- 2002.9.
  - (6) Senior Advisor, Ministry of Agriculture, Forestry and Fisheries 2000.2-Present
  - (7) Executive Research Advisor, National Food Research Institute 2003.1-Present
- 8) Additional Posts:  
Lecturer of Tokyo University and Tsukuba University, 1976-82

Visiting Associate Professor, Department of Biochemistry and Biophysics,  
Iowa State University, U.S.A. 1977-78

9) SERVICE:

- (1) President Elect, The Institute of Food Technologists, Japan section (2003-2004)
- (2) Vice Chairman, Task Force for the Safety of novel Foods and Feeds, OECD (2003- )
- (3) Advisory Board, Obihiro University of Agriculture and Veterinary Medicine (2002- )
- (4) Lead Shepherd (Chairman), Agricultural Technical Cooperation Working Group, Asia Pacific Economic Cooperation (APEC), (2000-2002)
- (5) Member, The Committee on Policy Matters, The Japanese Prime Minister's Council for Science and Technology (1998-2000)
- (6) Steering Committee of OECD Mega Science Forum (1996-1997)
- (7) Member, Technical Advisory Committee (TAC), Consultative Group on International Agricultural Research (CGIAR) (1995-1998)
- (8) Advisory Committee Member, Tsukuba Advanced Research Alliance Center, Tsukuba University (1994-1998)
- (9) The Japanese Biochemical Society, Counselor (1985-2002)
- (10) The Japanese Society of Applied Glycoscience (Formerly Japanese Society of Starch Science) President (1996- 1998)
- (11) The Japanese Society of Carbohydrate Research, Counselor (1990-2000)
- (12) The Society of Sago Palm Study, President (1996-2000)
- (13) Tropical Agriculture Research Association of Japan, Counselor (1994-2000)

9) HONORS AND AWARDS:

- 1975.4. The Japan Bioscience, Biotechnology and Agrochemistry Society Award for the Encouragement of Young Scientists. "Studies on the Structure and Use of Starch"
- 1977.6. The Award of Merit of the Japanese Society of Starch Science. "Fine Structure of Starch Molecule and Discovery of a New Maltohexaose Forming Amylase"
- 1982.4. The Award of the Minister of the Science and Technology Agency.  
"Contribution to the Elucidation of Fine Structure of Starch "
- 1984.9. The Second Dexter French Memorial Lectureship Award from Iowa State University, USA.  
"Fine Structure of Starch - Solved parts and Unsolved parts"
- 1992.6 Nikuni Award from The Japanese Society of Starch Science.  
"Contribution to the Elucidation of Fine Structure of Starch Molecule and Development of Utilization Technology of Starch "
- 1995.11. Alsberg-Schoch Memorial Lectureship Award from American association of Cereal Chemists. "Winding Road to the Double Helix Structure of Amylopectin Molecule "
- 2000.5. The Award of merit of The Nippon Agricultural Research Institute.  
"Fundamental Research on Structure and Utilization of Starch"

10) PUBLICATIONS:

Author of over 50 books and 350 research papers and review articles, co-inventor of over 90 patents related to glucose isomerization, starch utilization, starch derivatives, fine structure of starch

molecule, cyclodextrin, novel maltohexaose forming amylase, cellulose saccharification, raw starch saccharification, erythritol fermentation, food science, agriculture and food biotechnology, agricultural research policy, international collaboration in agricultural research etc.

2003.03.14.

### Publication List of Refereed Scientific Papers (K.Kainuma)

01. S.Kimura and K.Kainuma: Studies on the storage of Dehydrated Food by Freeze Drying. (Part 1) Changes of Sinigrin and Myrosinase in Dehydrated Eutrema wasabi Maxim. (Japanese) Nosan Kako Gijutukenkyukai 7,124-127(1960)
02. K.Kainuma, K.Tadokoro and S.Suzuki: Studies on the Analysis of Aldose and Ketose in the Mixed Solution (Part 1) Analysis of Aldose by the Modified Hypoiodite Method.(Japanese) Denpun Kogyo Gakkaishi (J.Technol.Soc. Starch) 12,57-61(1965)
03. K.Kainuma, K.Tadokoro and S.Suzuki: Studies on the Analysis of Aldose and Ketose in the Mixed Solution (Part 2) Analysis of Ketose by the Resorcinol—Thiourea Method.(Japanese) Denpun Kogyo Gakkaishi (J.Technol.Soc. Starch) 12,135-138(1965)
04. K.Kainuma, K.Tadokoro, K.Sugawara and S.Suzuki: Studies on the Analysis of Aldose and Ketose in the Mixed Solution (Part 3) Automatic Determination of Fructose by the Modified Cysteine-Carbazole Method. (Japanese) Denpun Kogyo Gakkaishi (J.Technol.Soc. Starch) 15,10-13(1967)
05. K.Kainuma, K.Tadokoro, K.Sugawara and S.Suzuki: Studies on the Analysis of Aldose and Ketose in the Mixed Solution (Part 4) Automatic Determination of Total Reducing Sugar by the Modified Ferricyanide Method with Autoanalyzer. (Japanese) Denpun Kogyo Gakkaishi (J.Technol.Soc. Starch) 15,14-17 (1967)
06. K.Kainuma and S.Suzuki: Studies on the Isomerization of Dextrose into Fructose (Part 1) Isomerization with Sodium Hydroxide. (Japanese) Nippon Nogeikagaku Kaishi (J.Agr.Chem.Soc.Japn.) 38,556-561(1964)
07. K.Kainuma, Tadokoro and S.Suzuki: Studies on the Isomerization of Dextrose into Fructose (Part 2) Isomerization with Various Kinds of Alkali Reagents. (Japanese) Nippon Nogeikagaku Kaishi (J.Agr.Chem.Soc.Japn.) 40,35-40(1966)
08. K.Kainuma, K.Tadokoro and S.Suzuki: Studies on the Isomerization of Dextrose into Fructose (Part 3) Effects of Cations on the Isomerization of Dextrose. (Japanese) Nippon Nogeikagaku Kaishi (J.Agr.Chem.Soc.Japn.) 42,173-177(1968)
09. K.Kainuma and S.Suzuki: Studies on the Isomerization of Dextrose into Fructose

- (Part 4) Design and Installation of the Pilot Plant of Continuous Isomerization and Determination of the Operating Conditions. (Japanese)  
Nippon Nogeikagaku Kaishi (J.Agr.Chem.Soc.Japn.) 42,243-248(1968)
10. K.Kainuma and S.Suzuki: Studies on the Isomerization of Dextrose into Fructose (Part 5) Isomerization by Continuous Flow System under Pilot Plant Scale. (Japanese)  
Nippon Nogeikagaku kaishi (J.Agr.Chem.Soc.Japn.) 42,249-254(1968)
  11. K.Kainuma, S.Suzuki: Isomerization of Dextrose into Fructose by the Alkali Method (Part 1) Basic Conditions of Isomerization with Several Kinds of Alkali Reagents.  
Die Staerke 18,135-141 (1966)
  12. K.Kainuma, S.Suzuki: Isomerization of Dextrose into Fructose by the Alkali Method (Part 2) Design and Installation of the Pilot Plant of the Continuous Isomerization and Determination of its Operating Conditions .  
Die Staerke 19,60-65 (1967)
  13. K.Kainuma, S.Suzuki: Isomerization of Dextrose into Fructose by the Alkali Method (Part 3) Isomerization with the Pilot Plant of the Continuous Flow System.  
Die Staerke 19,66-70 (1967)
  14. K.Kainuma, T.Oda and S.Suzuki: Determination of Gelatinization of Starch Granule by Photopastigraphy (Part 1) Design and Trial Manufacture of Photopastigraph. (Japanese) Denpun Kogyo Gakkaishi (J.Technol.Soc. Starch) 16,51-54 (1968)
  15. K.Kainuma, T.Oda and S.Suzuki: Determination of Gelatinization of Starch Granule by Photopastigraphy (Part 2) Analysis of Gelatinization Temperature of Various Starch Granules by Photopastigraphy. (Japanese) Denpun Kogyo Gakkaishi (J.Technol.Soc. Starch) 16, 54-60 (1968)
  16. K.Kainuma, T.Oda and S.Suzuki: Studies on the Phosphate Derivatives of Starch (Part 1) Synthesis of Phosphorus Cross-Linked Starch with Aqueous Solution of Phosphorus Pentoxide. (Japanese) Denpun Kogyo Gakkaishi (J.Technol.Soc. Starch) 14, 24-28 (1967)
  17. K.Kainuma, T.Oda and S.Suzuki: Studies on the Phosphate Derivatives of Starch (Part 2) Determination of Reaction Conditions of Phosphorus Pentoxide and Starch. (Japanese) Denpun Kogyo Gakkaishi(J.Technol.Soc.Starch) 16, 60-64 (1968)
  18. K.Kainuma and D.French: Structure of Branched Oligosaccharides obtained by the  $\alpha$ -Amylolysis of Amylopectin Molecules.(Japanese)  
Proceedings of Amylase Symposium 5, 35-37 (1970)
  19. K.Kainuma and D.French: Action of Pancreatic Amylase on Starch Oligosaccharides Containing Single glucose Side Chain. FEBS Lett. 5,257-261 (1969)

20. K.Kainuma and D.French: Action of Pancreatic  $\alpha$ -amylase and Sweet Potato  $\beta$ -amylase on 6<sup>2</sup>-, 6<sup>3</sup>- Glucosyl Maltooligosaccharides. FEBS Lett. 6,182-186(1970)
21. K.Kainuma and D.French: Naegeli Amylodextrin and Its Relationship to Starch Granule Structure. I. Preparation and Properties of Amylodextrins from Various Starch Types. Biopolymers 10,1673-1680 (1971)
22. K.Kainuma and D.French: Naegeli Amylodextrin and Its Relationship to Starch Granule Structure. II. Role of Water in Crystallization of B-Starch. Biopolymers 11,2241-2250 (1972)
23. K.Kainuma, S.Kobayashi and S.Suzuki: A Novel Amylase to Hydrolyze amylose into Maltohexaose. Proceedings of Amylase Symposium 6,31-37(1971)
24. K.Kainuma, S.Kobayashi, H.Ito and S.Suzuki: Isolation and Action Pattern of Maltohexaose Producing Amylase from Aerobacter aerogenes. FEBS Lett. 26, 281-285 (1972)
25. S.Kobayashi, T.Saito, K.Kainuma and S.Suzuki: Preparation of Maltooligosaccharides by the Improved Carbon Column Chromatography. (Japanese) Denpun Kogyo Gakkaishi (J.Technol.Soc. Starch) 18,(4)10-15(1971)
26. S.Kobayashi, K.Kainuma and S.Suzuki: An Improved Determination of Maltooligosaccharides by Densitometry. (Japanese) Denpun Kagaku (J.Japn.Soc. Starch Sci.) 19, 178-185 (1972)
27. K.Kainuma and S.Suzuki: A New Amylase which Produces Specifically Maltohexaose from Amylose. Proceedings, I.S.F.M. 95 (1971)
28. K.Kainuma, T.Furukawa and S.Suzuki: Studies on The Structure and Physico-Chemical Properties of Starch (Part 1) Changes in the Chemical and Physical Properties of Starch during Dextrinization. (Japanese) Denpun Kagaku (J.Japn.Soc. Starch Sci.)20,1-8 (1973)
29. K.Kainuma, S.Miyamoto and S.Suzuki: Studies on The Structure and Physico-Chemical Properties of Starch (Part 2) Reaction of Epichlorohydrin with Corn Starch. (Japanese) Denpun Kagaku (J.Japn.Soc. Starch Sci.)22,66-71(1975)
30. K.Kainuma: Studies on the Structure and Use of Starch. - Address for The Japan Bioscience, Biotechnology and Agrochemistsry Society Award for the Encouragement of Young Scientists. Nippon Nogeikagaku Kaishi (J.Agr.Chem.Soc.Japn.) 49,61-67(1975)
31. K.Kainuma, S.Miyamoto, S.Yoshioka and S.Suzuki: Studies on The Structure and Physico-Chemical Properties of Starch (Part 3) Changes in Physical Properties of High Phosphate Potato Starch by Substitution of Cations. (Japanese) Denpun Kagaku (J.Japn.Soc. Starch Sci.) 23,59-66 (1976)
32. K.Kainuma, K.Yamamoto, S.Suzuki, T.Takaya and H.Fuwa: Studies on The Structure and Physico-Chemical Properties of Starch (Part 4)

- Structural, Chemical and Rheological Properties of Air Classified Small- and Large Granule Potato Starch. (Japanese)  
Denpun Kagaku (J. Japn. Soc. Starch Sci.) 25, 3-11(1976)
33. K.Ishii, A.Shimada, F.Yoshimatsu, K.Kainuma and S.Suzuki:  
Effects of the Oxidized Linseed Oil on the Physico-Chemical Properties of Starch. (Japanese) Denpun Kagaku (J. Japn.Soc. Starch Sci.) 23, 82-90(1976)
34. K.Ishii, A.Shimada, F.Yoshimatsu, K.Kainuma and S.Suzuki:  
Effects of Fatty Acids and Alcohols on the Properties of Corn and Potato Starches. (Japanese) Denpun Kagaku (J. Japn.Soc. Starch Sci.) 23,152-155 (1976)
35. K.Kainuma: New Amylases to Produce Specific Maltooligosaccharides from Starch. (Japanese) Denpun Kagaku(J.Japn.Soc.Starch Sci.)21,222-229 (1974)
36. K.Kainuma, K.Wako, S.Kobayashi, A.Nogami and S.Suzuki:  
Purification and Some Properties of a Novel Maltohexaose Producing Exo - Amylase from *Aerobacter aerogenes*. *Biochim.Biophys.Acta* 410, 333-346 (1975)
37. K.Kainuma: Fine Structure of Starch and Maltohexaose Forming Amylase -  
Address for the Award of Merit of the Japanese Society of Starch Science  
Denpun Kagaku (J.Japn.Soc.Starch Sci.) 24,141-147 (1977)
38. A.D.French, V.G.Murphy and K.Kainuma: Accessible Conformations of Amylose- A Computer Modeling Study. (Japanese)  
Denpun Kagaku(J.Japn.Soc.Starch Sci.) 25,171-176 (1978)
39. K.Kainuma, S.Kobayashi and T.Harada: Action of *Pseudomonas Isoamylase* on Various Branched Oligo- and Polysaccharides. *Carbohyd.Res.* 61,345-357(1978)
40. K.Kainuma, K.Wako, A.Nogami and S.Suzuki: Automated Assays of Carbohydrase Activity by Technicon Autoanalyzer. (Japanese)  
Denpun Kagaku (J.Japn.Soc.Starch Sci.) 20,112-119 (1973)
41. K.Kainuma, K.Wako and S.Suzuki: Gas chromatographic Determination of Trimethylsily Derivatives of Maltooligosaccharides. (Japanese)  
Denpun Kagaku (J.Japn.Soc.Starch Sci.) 21,120-123 (1974)
42. K.Umeki and K.Kainuma: Fractionation of Maltosaccharides of Relatively High Degree of Polymerization by Multiple Descending Paper Chromatography. *J.Chromatog.* 150, 242-245 (1978)
43. K.Kainuma, A.Nogami and C.Mercier: Gel Permeation Chromatography of Maltosaccharides on Polyacrylamide Gel. *J.Chromatog.* 121,361-369 (1976)
44. S.Miyamoto, C.Tsutsumi and K.Kainuma: An Improved Method for the Determination of Cations Bound to Phosphate in Potato Starch. (Japanese)  
Denpun Kagaku (J. Japn.Soc. Starch Sci.) 23,91-95 (1976)

45. S.Kobayashi, K.Kainuma and S.Suzuki: Action Pattern of Cyclodextrin Glucanotransferase. (Japanese) Proc. of Amylase Symp. 9, 29-36 (1974)
46. S.Kobayashi, K.Kainuma and S.Suzuki: Cyclodextrin Forming Enzyme of *Bacillus macerans* I. Determination of  $\alpha$ -,  $\beta$ -Cyclodextrin. (Japanese) Denpun Kagaku (J.Japn.Soc.Starch Sci.) 21,131-137 (1974)
47. S.Kobayashi, K.Kainuma and S.Suzuki: A New Preparation Method of Cyclodextrin. (Japanese) Denpun Kagaku (J.Japn.Soc.Starch Sci.) 22,6-10 (1975)
48. S.Kobayashi, K.Kainuma and S.Suzuki: Preparation of  $\alpha$ -, Branched and Hydroxyethyl Cyclodextrins in the Presence of Sodium Dodecyl Sulfate. (Japanese) Nippon Nogeikagaku kaishi (J.Agr.Chem.Soc.Japn.) 51,691-698 (1977)
49. S.Kobayashi, K.Kainuma and S.Suzuki: Purification and Some Properties of *Bacillus macerans* Cycloamylose Glucanotransferase. Carbohyd.Res. 61, 229-238 (1978)
50. K.Kainuma, K.Sugawara and S.Suzuki: Synthesis and Some Properties of Panulose - A New Keto-Oligosaccharides. Die Staerke 26,274-277 (1974)
51. C.Mercier and K.Kainuma: Enzymic Debranching of Starches from Maize of Various Genotypes in High Concentration of Dimethylsulfoxide. Die Staerke 27,289-292 (1975)
52. T.Moro, S.Kobayashi, K.Kainuma and T.Iijima: Interaction of Cycloamylose with Polymers. Carbohyd.Res. 75,345-348 (1979)
53. M.Yamaguchi, K.Kainuma and D.French: Electron Microscopic Observations of Waxy Maize Starch. J.Ultrastruct.Res. 69, 249-261 (1979)
54. T.Sasaki, T.Tanaka, N.Nanbu, Y.Sato and K.Kainuma: Correlation between X-Ray Diffraction Measurements of Cellulose Crystalline Structure and the Susceptibility to Microbial Cellulase. Biotech.Bioeng. XXI 1031-1042 (1979)
55. T.Sasaki, Y.Sato and K.Kainuma: Saccharification of Rice Hull Glucoxylan. (Japanese) Nippon Shokuhin Kogyo Gakkaishi 26,493-497 (1979)
56. T.Sasaki, Y.Sato, S.Nakagawa, M.Shiraishi and K.Kainuma: Crystallinity and Enzymic Hydrolysis of Cryomilled Rice Hull Cellulose. (Japanese) Nippon Shokuhin Kogyo Gakkaishi 26,523-529 (1979)
57. T.Sasaki, T.Tanaka and K.Kainuma: A Simple Method for Preparation of cello-oligosaccharides. (Japanese) Nippon Shokuhin Kogyo Gakkaishi 26,538-541 (1979)
58. T.Sasaki, Y.Sato, T.Kobayashi and K.Kainuma: Enzymic Conversion of Cryomilled Waste Cellulose to Glucose. (Japanese) Nippon Shokuhin Kogyo Gakkaishi 27,270-274 (1980)
59. T.Sasaki, J.Hayashi, N.Ishida and K.Kainuma: Swelling, Solubilization and its Morphological Changes of Sweet Potato Starch Granules

- by Urea and Pullulanase. (Japanese)  
Nippon Shokuhin Kogyo Gakkaishi 27,489-497 (1980)
60. K.Kainuma: Starch Resources in the Tropics with Special Reference to sago Palm.  
(Japanese) Japan J.Trop.Agr. 23,35-39 (1979)
  61. K.Kainuma, A.Matsunaga, M.Itagawa and S.Kobayashi:  
New Enzyme System —  $\beta$ -Amylase-Pullulanase — To Determine the Degree of  
Gelatinization and Retrogradation of Starch or Starch Products. (Japanese)  
Denpun Kagaku (J.Japn.Soc.Starch Sci.)28,235-240 (1981)
  62. K.Umeki and K.Kainuma:  
Fine Structure of Naegeli Amylodextrin Obtained by Acid Treatment of Defatted  
Waxy Maize Starch-Structural Evidence to Support the Double Helix Hypothesis-  
Carbohyd.Res. 96,143-159 (1981)
  63. A.Matsunaga and K.Kainuma: Studies on the Retrogradation of Starchy Foods  
(Part 1) Retrogradation of Cooked Rice. (Japanese)  
Kaseigaku Zasshi (J.Home Economics Japn.) 32,653-659 (1981)
  64. S.Takahashi, H.Kitahara and K.Kainuma:  
Properties and Cooking Quality of Starches (Part 1) Chemical and Physical Properties  
of Starches from Mung Bean and Sago. Japanese)  
Denpun Kagaku (J.Japn.Soc.Starch Sci.) 28,151-159(1981)
  65. K.Kainuma, T.Nakakuki and T.Ogawa:  
High Performance Liquid Chromatography of Maltosaccharides.  
J.Chromatog. 212,126-131 (1981)
  66. S.Kobayashi, K.Kainuma and D.French:  
The Preparation and Some Properties of Glucosyl-Cyclodextrins.  
Int.Symp. Cyclodextrins p. 51 (1981)
  67. T.Nakakuki and K.Kainuma:  
Fractionation of Maltosaccharides by Gel Filtration Chromatography.  
Denpun Kagaku (J.Japn.Soc.Starch Sci.) 29,27-33(1982)
  68. T.Nakakuki, M.Monma, K.Azuma, S.Kobayashi and K.Kainuma:  
Production of Extracellular Exo-maltohexaohydrolase and Pullulanase from  
a Mutant of *Aerobacter aerogenes*.  
Denpun Kagaku (J.Japn.Soc.Starch Sci.) 29,179-187 (1982)
  69. T.Nakakuki, Azuma, M.Monma and K.Kainuma:  
Purification and Some Properties of an Extracellular Exo-maltohexaohydrolase  
from an *Aerobacter aerogenes* Mutant.  
Denpun Kagaku (J.Japn.Soc.Starch Sci.) 29, 188-197 (1982)

70. K.Kainuma and D. French: Action of Porcine Pancreatic Amylase on Oxidized-Reduced Amylose of Low Degree Modification. Carbohydr.Res.106, 143-153 (1982)
71. T.Sasaki and K.Kainuma: Regulation of Starch Synthesis and External Polysaccharide synthesis by Gibberellic Acid in Cultured Sweet Potato Cell. Plant Tissue Culture 255-256 (1982)
72. T.Watanabe, M.Shida, Y.Furuyama, K.Tsukamoto, T.Nakajima, K.Matsuda and K.Kainuma: Structure of the Arabinoxylan of Rice Hull. Carbohydr.Res. 123,83-95 (1983)
73. S.Kobayashi, K.Kainuma and D.French: Effect of Surfactants on Cyclization of *Bacillus macerans* Cyclodextrin Glucanotransferase. Denpun Kagaku (J.Japn.Soc.Starch Sci.) 30,62- 68 (1983)
74. T.Sasaki, T.Tanaka, S.Nakagawa and K.Kainuma: Purification and Properties of *Cellvibrio gilvus* Cellobiose Phosphorylase. Biochem. 209, 803-807 (1983)
75. M.Monma, T.Nakakuki and K.Kainuma: Formation and Hydrolysis of Maltohexaose by Extracellular Exo-maltohexaohydrolase. Agric.Biol.Chem. 47,1769-1774 (1983)
76. T.Nakakuki, T.Hayashi, M.Monma, K.Kawashima and K.Kainuma: Immobilization of the Exo-maltohexaohydrolase by the Irradiation Method. Biotech.Bioeng. x x v , 1095 - 1107 (1983)
77. A.Matsunaga and K.Kainuma: Studies on the Retrogradation of Starchy Foods (Part 2) Degree of Gelatinization of Starch in Commercially Processed Foods. (Japanese) Kaseigaku Zasshi (J.Home Economics Japn.) 34,73-78(1983)
78. U.Matsukura, A.Matsunaga and K.Kainuma: Structural Studies on Retrograded Normal and Waxy Corn Starches. Denpun Kagaku (J.Japn.Soc.Starch Sci.) 30,106-113 (1983)
79. S.Takahashi, R.Kobayashi, T.Watanabe and K.Kainuma: Effects of Addition of Soybean Protein on Gelatinization and Retrogradation of Starch. (Japanese) Nippon Shokuhin Kogyo Gakkaishi 30,276-282 (1983)
80. S.Amarakone, H.Ishigami and K.Kainuma: Conversion of Oligosaccharides Formed During Starch Hydrolysis by a Dual Enzyme System. Denpun Kagaku (J.Japn.Soc.Starch Sci.) 31,1-7 (1984)
81. T.Nakakuki, K.Azuma and K.Kainuma: Action patterns of Various Exo -Amylases and the Anomeric Configurations of their Products. Carbohydr.Res. 128,297-310 (1984)
82. T.Watanabe, M.Shida, T.Murayama, Y.Furuyama, T.Nakajima, K.Matsuda and

- K.Kainuma: Xyloglucan Cell Walls of Rice Hull. *Carbohyd.Res.*129, 229-242 (1984)
83. T.Nakajima, K.Tsukamoto, T.Watanabe, K.Matsuda and K.Kainuma:  
Purification and Some Properties of an Endo-1,4-beta -d-Xylanase from  
*Streptomyces sp.* *J.Ferment.Technol.* 62,269-276 (1984)
84. K.Kainuma, H.Ishigami and S.Kobayashi:  
Isolation of a Novel Raw Starch digesting Amylase from a Strain of Black Mold  
*Chalara paradoxa*. *Denpun Kagaku (J.Japn.Soc.Starch Sci.)* 32,136-141 (1985)
85. H.Ishigami, H.Hashimoto and K.Kainuma:  
Determination of Optimum Culture Conditions for the *Chalara* Enzyme Production.  
*Denpun Kagaku (J.Japn.Soc.Starch Sci.)* 32,189-196 (1985)
86. H.Ishigami, H.Hashimoto and K.Kainuma:  
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*Denpun Kagaku (J.Japn.Soc.Starch Sci.)* 32,197-204 (1985)
87. K.Nishinari, N.Shibuya and K.Kainuma: Dielectric Relaxation in Solid Dextran  
and Pullulan. *Makromol.Chem.* 186,433-438 (1985)
88. C.Wongkhalaung, T.Sasaki, K.Kainuma and T.Ohta:  
Properties of Glucoamylase Immobilized on Soluble Polymer. (Japanese)  
*Nippon Shokuhin Kogyo Gakkaishi* 32,127-129 (1985)
89. T.Sasaki and K.Kainuma: Bioconversion of Cellulose to  $\alpha$ -1, 4- Glucan.  
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90. A.Matsunaga, N.Ishida and K.Kainuma:  
Degree of Gelatinization of Starch During the Cooking Process of Rice. (Japanese)  
*Nippon Shokuhin Kogyo Gakkaishi* 32,797-803 (1985)
91. T.Sasaki and K.Kainuma: Control of Starch and Exocellular Polysaccharides  
Biosynthesis by Gibberellic Acid with Cells of Sweet Potato Cultured in vitro.  
*Plant Cell Rept.*3, 23-26(1984)
92. S.Takahashi, R.Kobayashi, K.Kainuma and M.Nakamura:  
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