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OCTOBER 1988 - SEPTEMBER 1989

Patricia E. Bremner
and
M. Eileen Collins
Editors

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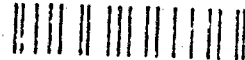
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Preface

This bibliography is a list of technical publications and papers by personnel of the U.S. Army Natick Research, Development and Engineering Center and its contractors for the period October 1988 through September 1989. The arrangement is by organizational elements. Previously unreported items from past years are included. Patents issued to Natick personnel are also listed.

Reprints of journal articles, in some cases, are available from the individual authors or from the Technical Library. Copies of technical reports may be obtained on loan from the Technical Library, or from (1) Defense Technical Information Center, Cameron Station, Alexandria, Virginia 22304-6145 or (2) the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161. The "AD" numbers, if available, should be cited when ordering copies of reports.

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Bibliography of Technical Publications, Papers and List of Patents

October 1988 - September 1989

OFFICE OF THE COMMANDER

Journal Articles

1. **HODDER, C. A.** Report from Natick. Activities Report. Research and Development Associates 40(2): 7-11 (1988).
2. _____. Welcome address. Activities Report. Research and Development Associates 41(1): 2,9 (1989).
3. _____. What the Armed Forces expect from the food and packaging industries in research, development, and testing. Activities Report. Research and Development Associates 41(2): 7-12 (1989).

OFFICE OF THE TECHNICAL DIRECTOR

Technical Report

4. SKLARSKY, T. A., Editor. Proceedings of the Second Natick Science Symposium - 1-3 June 1988. NATICK/TR-88/052, June 1988 (AD A200 977).

ADVANCED SYSTEMS CONCEPTS DIRECTORATE

Technical Reports

5. FUCCILLO, N. E. Airdrop missions and equipment management system. NATICK/TR-89/030, May 1989 (AD A208 934).
6. HILL, B. M., N. FUCCILLO, P. H. WARREN, C. E. MILES, N. J. KELLEY, J. AYLWARD, and L. COX. Food management program for the advanced base. NATICK/TR-89/014, January 1989 (AD A205 356).
7. KNIGHT, J. B. with K. SCHROEDER and J. A. BENSON. Marine Corps dining concepts in the 1990's Volume III: The systems analysis. NATICK/TR-89/006, October 1988 (AD A201 116).
8. KNIGHT, J. B., B. WONG, R. WOODS, K. L. EVANGELOS, and J. A. BENSON. Marine Corps dining concepts in the 1990's Volume IV: Design guide. NATICK/TR-89/018, February 1989 (AD A206 220).
9. O'BRIEN, R., B. BELL, and C. REES. Air Force flight feeding Volume I: Evaluation of current system and alternative concepts. NATICK/TR-89/039, August 1989 (AD A212 789).
10. O'BRIEN, R., J. ROSADO, and S. SUNDARUM. Air Force flight feeding Volume II: Test and evaluation of a new concept. NATICK/TR-89/012L, January 1989 (AD B131 440L).
11. O'KEEFE, J. A. Casualty reduction modeling. NATICK/TR-89/008L, November 1988 (AD B129 107L).
12. _____. Individual body armor. NATICK/TR-89/007L, October 1988 (AD B129 106L).
13. _____. Materiel support to low intensity conflicts. NATICK/TR-89/037L, July 1989 (AD B135 046L).
14. SMITH, J. M., L. SEIFORD, and J. D. SMITH. Siting of appropriated fund enlisted dining facilities. University of Massachusetts. NATICK/TR-89/025, March 1989 (AD A207 713).

AERO-MECHANICAL ENGINEERING DIRECTORATE

Technical Reports

15. COSKREN, R. V., N. J. ABBOTT, and E. A. WUESTER. Investigation of the service and age lives of U.S. Army troop parachutes. NATICK/TR-87/019L, November 1986 (AD B111 940).
16. DALE, J. D., E. PAUL, and S. B. HOTTMAN. Chemically hardened Army medical facilities. Systems Research Laboratories, Inc. Contract No. DAAK60-85-C-0046. NATICK/TR-87/018L, August 1986 (AD B111 122L).
17. HAMPEL, J. W. Concepts for chemically hardening the Command Post tent. NATICK/TR-89/023L, February 1989 (AD B132 724).
18. KRAINSKI, W. J. JR. Investigation of alternative framing arrangements using pressure-stabilized beams for battalion aid station support. NATICK/TR-88/071, September 1988 (AD A198 774).
19. LEE, C. K. Performance of a single balloon-skirt airbag in vertical drops. NATICK/TR-88/059, July 1988 (AD A198 240).
20. NICKERSON, C. Concept study: mobile medical facility for the chemical battlefield. NATICK/TR-87/007L, July 1985 (AD B110 274).
21. _____. Shelter applications for reactive materials. NATICK/TR-88/038L, February 1988 (AD B122 398).
22. ROSS, E. W. Control systems for platform landings cushioned by air bags. NATICK/TR-88/021, July 1987 (AD A196 154).
23. RYBCZYK, T., F. SHERMAN, E. DOUCETTE, and J. CALLIGEROS. Technical objective document for airdrop systems. NATICK/TR-89/021, November 1988 (AD A206 552).
24. SINOFSKY, M. and W. FOWLER. Development of a frame and fabric battalion aid station. Chemfab New York, Inc. Contract No. DAAK60-85-C-0058. NATICK/TR-88/036L, May 1986 (AD B123 596).
25. _____. Development of a trailerless collective protection shelter. Chemfab New York, Inc. Contract No. DAAK60-85-C-0052. NATICK/TR-88/028L, July 1987 (AD B124 295).
26. _____. Development of an improved air-supported battalion aid station. Chemfab New York, Inc. Contract No. DAAK60-85-C-0057. NATICK/TR-88/029L, May 1986 (AD B121 250).
27. STEEVES, E. C. Evaluation of design concepts for tents with CW protection requirements. NATICK/TR-88/023, September 1987 (AD A193 890).

AERO-MECHANICAL ENGINEERING DIRECTORATE

Technical Papers

28. CYRUS, J. and G. W. THIBAUT. Development of the high speed airdrop container (HISAC) - A status report. 10th Aerodynamic Decelerator Systems Technology Conference, Cocoa Beach, FL, 18-20 April 1989.
29. GODFREY, T. A. Response of a lightweight composite HMMWV shelter to blast and thermal pulse loadings. 11th International Symposium on Military Applications of Blast Simulation, Albuquerque, NM, 10-15 September 1989.
30. SIEGEL, J. M. Advances in Army shelter technology for protection of electronic systems. 9th Annual International Electronic Packaging Conference, San Diego, CA, 11-13 September 1989.
31. WATKINS, J. W. Development of a low altitude tactical assault parachute. 10th Aerodynamic Decelerator Systems Technology Conference, Cocoa Beach, FL, 18-20 April 1989.
32. RODIER, R. W., E. A. WUESTER, and J. E. HALL. Personnel parachute age/service life criteria. 10th Aerodynamic Decelerator Systems Technology Conference, Cocoa Beach, FL, 18-20 April 1989.

Journal Article

33. LEE, C. K. Modeling of parachute opening: an experimental investigation. *Journal of Aircraft* 26(5): 444-451 (1989).

FOOD ENGINEERING DIRECTORATE

Technical Reports

34. DEVOLDER, L. Development of a prototype drinking water packaging system. Chemac Industries, Inc. Contract No. DAAK60-85-C-0042. NATICK/TR-88/061L, October 1987 (AD B127 470L).
35. SMITH, J. M. Cost driver analysis for tray pack foods. University of Massachusetts. NATICK/TR-88/034, March 1988 (AD A194 668).
36. _____. Tray pack prototype plant design. University of Massachusetts. NATICK/TR-87/017, June 1986 (AD A180 296).
37. SMITH, J. M., J. T. CLAYTON, C. J. LIZAK, and J. R. ROSENAU. Producibility, engineering and planning for tray pack foods. NATICK/TR-88/007, September 1987 (AD A190 209).
38. SYDNOR, G. R. Design of a pilot plant for vacuum infusion of high lipoidal liquids into dried foods. Engineering Incorporated. Contract No. DAAK60-85-C-0008. NATICK/TR-88/075, July 1988 (AD A200 503).

Technical Paper

39. ERICKSON, S. Nutrition and maxillofacial injuries -- a new approach. Association of Military Surgeons of the United States Annual Meeting, San Antonio, TX, 3 November 1988.

Journal Articles

40. AYOUB, J. A., M. G. DRIVER, and I. A. TAUB. Use of ethylene absorbers in extending shelf life. Activities Report. Research and Development Associates 41(1): 93-98 (1989).
41. BARRETT, A. and E. ROSS. Characteristics of extrudates. Activities Report. Research and Development Associates 41(1): 52-59 (1989).
42. BRANDLER, P. Feeding the Army and the Marine Corps of the future - a challenge to industry. Activities Report. Research and Development Associates 41(2): 33-40 (1989).
43. BRIGGS, J. Nutritional sustainment module (NSM), a new military ration. Activities Report. Research and Development Associates 41(2): 50-51 (1989).
44. GAGNE, S. D. Tray pack menus for FY88 and FY89. Activities Report. Research and Development Associates Minutes No.6: 20-22 (1988).
45. _____. Tray pack product and menu development. Activities Report. Research and Development Associates Minutes No.6: 18-20 (1988).

FOOD ENGINEERING DIRECTORATE

Journal Articles (cont'd)

46. KIM, H.-J. Comparison of the ion exclusion chromatographic method with the Monier-Williams method for determination of total sulfite in foods. *Journal of the Association of Official Analytical Chemists* 72(2): 266-272 (1989).
47. _____. Determination of total vitamin C by ion exclusion chromatography with electrochemical detection. *Journal of the Association of Official Analytical Chemists* 72(4): 681-686 (1989).
48. WRIGHT, B. B. and I. A. TAUB. Noninvasive process monitors for ensuring quality and safety of thermoprocessed foods. *Activities Report. Research and Development Associates* 41(1): 10-19 (1989).

Other Publication

49. KIM, H.-J. and Y.-K. KIM. Food applications of ion exclusion chromatography with electrochemical detection. In: *Advances in ion chromatography, Vol. 1.* P. Jandik and R. M. Cassidy (eds.) Franklin, MA: Century International, Inc., 1989, pp. 391-403.

INDIVIDUAL PROTECTION DIRECTORATE

Technical Reports

50. DENT, R. W., J. G. DONOVAN, J. SKELTON, and S. FOSSEY. Development of synthetic down alternatives - Phase II. Albany International Research Co. Contract No. DAAK60-83-C-0022. NATICK/TR-87/004L, January 1986 (AD B133 116L).
51. DENT, R. W. Projectile impact with flexible armor-model with crimp interchange. Albany International Research Co. Contract No. DAAK60-84-C-0034. NATICK/TR-88/080L, July 1988 (AD B134 773).
52. DONOVAN, J. G. Pilot line development of high performance thermal insulation. Albany International Research Co. Contract No. DAAK60-87-C-0061. NATICK/TR-89/041L, September 1989 (AD B139 693).
53. GIBSON, P. W. Response of clothing materials to air shock waves. NATICK/TR-89/043, September 1989 (AD A212 798).
54. LIN, J. W. Ballistic face shield with deicing/defogging capabilities. Polytronix, Inc. Contract No. DAAK60-87-C-0040. NATICK/TR-89/016L, January 1989 (AD B131 265L).
55. MORELAND, E. J. The effect of drycleaning moisture on fused cloth systems. International Fabricare Institute. Contract No. DAAK60-87-M-0242. NATICK/TR-89/024, March 1989 (AD A208 052).
56. SMITH, S. R. A study of the accelerated degradation of chemical protective cloths. University of Connecticut. Contract No. DAAK60-84-R-0032F. NATICK/TR-89/032L, May 1989 (AD B133 814L).
57. TRUONG, J. Q. T. with R. C. LAIBLE. Testing and evaluation of waterproof/breathable materials for chemical protective clothing applications. NATICK/TR-88/016L, October 1987 (AD B118 076).

Technical Papers

58. TRUONG, Q. T. Semipermeable materials for chemical/biological protective combat uniforms. American Defense Preparedness Association Symposium on Agents of Biological Origin, Laurel, MD, 21-23 March 1989.
59. CUNNIFF, P. M., SONG, J. W., and WARD, J. E. Investigation of high performance fibers for ballistic impact resistance potential. 21st International SAMPE Technical Conference, Atlantic City, NJ, 25-28 September 1989.

INFORMATION MANAGEMENT DIRECTORATE

Technical Report

60. BREMNER, P. E. and M. E. COLLINS. Bibliography of technical publications, papers and patent issued - October 1986-September 1987. NATICK/TR-88/001, July 1989 (AD A210 941).

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Technical Reports

61. AKKARA, J. A., M. GREENBERGER, and D. KAPLAN. New analytical methods for the fungicides paranitrophenol, 2,2'-methylene bis-(4-chlorophenol), salicylanilide and copper 8-quinolinolate. NATICK/TR-89/017, November 1988 (AD A205 310).
62. ARCIDIACONO, S. and D. L. KAPLAN. Production and analysis of the biopolymer chitosan from *Mucor rouxii*. NATICK/TR-88/046, November 1987 (AD A214 111).
63. ATWOOD, B. M. and C. P. DUNNE. Effect of halogen-treated water on micronutrients in military ration beverages. NATICK/TR-89/031, May 1989 (AD A210 063).
64. BURSTEIN, P. Feasibility of inspection of fungicidal finishes on textiles by X-ray. Skiametrics, Inc. Contract No. DAAK60-87-C-0045. NATICK/TR-89/040, August 1989 (AD A212 525).
65. COHEN, S. and P. CONNOLLY. Microscopic methods for evaluating carbon and carbonaceous sorbents in chemical protective material. NATICK/TR-88/042L, December 1987 (AD B121 415L).
66. COHEN, S., A. BARRETT, and C. HINTLIAN. Microstructural evaluation of porous nutritional sustanment module extrudates and infusates. NATICK/TR-89/034, July 1989 (AD A212 714).
67. CORNELL, J. H., L. A. LEVASSEUR, and F. H. BISSETT. Molecular sensors for detection and identification of chemical warfare agents. NATICK/TR-89/019, February 1989 (AD A206 671).
68. CULLEN, J. W. and D. E. REMY. Progress on the synthesis of extended PI system metallotetrabenzporphyrins. NATICK/TR-89/033, June 1989 (AD A240 294).
69. _____. Progress on the synthesis of facially hindered metallotetrabenzporphyrins. NATICK/TR-88/062, July 1988 (AD A198 784).
70. EDINBERG, J. and D. ENGELL. Field evaluation of the B ration in a hot weather environment. NATICK/TR-89/002, July 1988 (AD A200 719).
71. _____. Hospital liquid diet evaluation, two-day menu. NATICK/TR-89/010, September 1988 (AD A201 741).
72. GORDON, C. C., T. CHURCHILL, C. E. CLAUSER, B. BRADTMILLER, J. T. MCCONVILLE, J. TEBBETTS, and R. A. WALKER. 1988 Anthropometric survey of U.S. Army personnel: methods and summary statistics. Anthropology Research Project, Inc. Contract No. DAAK60-86-C-0128. NATICK/TR-89/044, September 1989 (AD A225 094).
73. _____. 1988 Anthropometric survey of U.S. Army personnel: summary statistics interim report. Anthropology Research Project, Inc. Contract No. DAAK60-86-C-0128. NATICK/TR-89/027, March 1989 (AD A209 600).

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Technical Reports (cont'd)

74. HOKE, L., R. A. SEGARS, S. COHEN, A. KING, and E. JOHNSON. Low speed air-flow characterization of military fabrics. NATICK/TR-89/013, October 1988 (AD A205 759).
75. JEZIOR, B. A., L. E. SYMINGTON, K. CHOQUETTE, and C. A. SALTER. Improving Marine Corps food service management and training. NATICK/TR-87/014, May 1986 (AD A179 890).
76. KALICK, J. and R. POPPER. Evaluation of new liquid foods via focus groups. NATICK/TR-89/042, September 1989 (AD A240 836).
77. KAPLAN, D. L. Materials biotechnology symposium proceedings, 23-24 June 1987. NATICK/TR-88/033, November 1987 (AD A194 604).
78. KAPLAN, D. L., M. MANDELS, J. MAYER, J. AKKARA, S. J. LOMBARDI, B. WILEY and K. SENEAL. Exploitation of biotechnology in combat feeding survival scenarios. NATICK/TR-89/028L, October 1988 (AD B133 327L).
79. KEITH, J. A., B. J. WILEY, D. A. ZORFASS, S. ARCIDIACONO, J. M. MAYER, and D. L. KAPLAN. The production, purification and properties of the biopolymer levan produced by the bacterium *Erwinia herbicola*. NATICK/TR-89/038, August 1989 (AD A223 522).
80. MULLER, W. S., M. ROGERS, D. SEEKINS, and R. YOUNG. Chemical sanitation system for pots and pans in field operations. NATICK/TR-89/020, February 1989 (AD A205 547).
81. PAQUETTE, S. P. and C. C. GORDON. Derivation of an extra-large PASGT helmet. NATICK/TR-88/066, July 1988 (AD A201 058).
82. REECE, J., C. LEE, and G. J. SILVERMAN. The penetrability of seven test materials by a protein-containing aerosol. NATICK/TR-89/036L, July 1989 (AD B134 356).
83. REMY, D. and L. A. LEVASSEUR. The effects of supercritical fluids on high performance polymers. NATICK/TR-89/022, February 1989 (AD A206 515).
84. ROACH, J. F., G. J. CALDARELLA, M. L. HERZ, and F. H. BISSETT. Properties of laser hardening materials for use in Army uniforms. NATICK/TR-87/033L, February 1987 (AD B114 649L).
85. ROY, G. G. JR., J. REECE, C. LEE, B. CLOUGH, and G. J. SILVERMAN. The penetrability of battle dress overgarment fabric by a protein-containing aerosol. NATICK/TR-89/009L, October 1988 (AD B128 587L).
86. SEGARS, R., E. JOHNSON, L. HOKE, C. BUETTNER, B. PRANGRLE, and D. NORDQUIST. Physical parameters affecting liquid penetration and wetting of fabrics. NATICK/TR-88/017, June 1987 (AD A190 667).
87. SIEGEL, S. F., P. M. POOLE, E. W. ASKEW, M. A. KINNEY, C. SHAW, J. AYLWARD, and S. HUNTER. Twelve-day field test of ration, lightweight, 30-day at Fort Chaffee, Arkansas. NATICK/TR-87/032, November 1985 (AD A184 477).

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Technical Reports (cont'd)

88. SOUSA, S., J. A. AKKARA, and D. L. KAPLAN. Assessment of potential microbial contamination in the laundry and decontamination dry cleaning system (LADDS). NATICK/TR-88/004, July 1986 (AD A188 298).
89. _____. Microbial evaluation of recycled rinse water in military field laundering. NATICK/TR-88/008L, July 1987 (AD B118 080L).
90. TENNISSEN, A. M., L. L. LESHNER, and A. V. CARDELLO. The effects of rotary motion on taste and odor ratings: implications for space travel. State University of New York. Contract No. DAAL03-86-D-0001. NATICK/TR-88/055, December 1987 (AD A198 241).
91. WANG, C. P., M. NAKASHIMA, and F. H. BISSETT. Chemical research for directed energy weapons. NATICK/TR-89/026L, March 1989 (AD B133 263L).
92. WARREN, P. H. Psychosocial accommodation to group confinement in the advanced base habitat. NATICK/TR-88/063, June 1988 (AD A199 588).
93. WILEY, B. J., S. M. ARCIDIACONO, D. H. BALL, J. M. MAYER, and D. L. KAPLAN. Physiological requirements for the production of the biopolymer elsinan by species of *Elsinoe*. NATICK/TR-89/035, June 1989 (AD A210 692).

Technical Papers

94. CARDELLO, A. V., K. J. WITHAM, D. A. ZORFASS, and S. LINSKY. Consumer expectations: a test of their effect on food acceptance. Annual Meeting of the Institute of Food Technologists, Chicago, IL, 25-29 June 1989.
95. GALLO, B. J. Distribution of bacterial DFP'ases. Proceedings of the 1988 U.S. Army Chemical Research, Development and Engineering Center Scientific Conference on Chemical Defense Research, Aberdeen Proving Ground, MD, 15-18 November 1988, pp. 681-688.
96. HALLIDAY, J. W. Investigation of transport through protective materials under variable carrier flow conditions. Proceedings of the 1988 U.S. Army Chemical Research, Development and Engineering Center Scientific Conference on Chemical Defense Research, Aberdeen Proving Ground, MD, 15-18 November 1988, pp. 905-911.
97. HOSKIN, F. C. G. and J. WALKER. Isomers of soman as research tools for the study of organophosphorous acid (OPA) anhydrases (formerly DFP'ases). Third Symposium on Protection Against Chemical Warfare Agents, Umea, Sweden, 11-16 June 1989.
98. JEZIOR, B., L. SYMINGTON, G. GREENE, and A. SALVATO. Soldier feedback for better products. 30th Annual Conference of the Military Testing Association, Arlington, VA, 27 November - 2 December 1988, pp. 51-56.
99. KLUTER, R. A., C. P. DUNNE, R. POPPER, and D. NATTRESS. Optimization and storage of fruits processed in retort pouches. 50th Annual Meeting, Institute of Food Technologists, Chicago, IL, 27 June 1989.

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Technical Papers (cont'd)

100. SALTER, C. A., L. S. LESTER, H. DRAGSBAEK, R. POPPER, and E. HIRSCH. A fully automated memory and search task. 30th Annual Conference of the Military Testing Association, Arlington, VA, 27 November - 2 December 1988, pp. 515-520.

101. SALVATO, A., B. JEZIOR, and S. D. GAGNE. Field evaluation of tray pack entrees: hamburger meal, sausage and potatoes in gravy, and bread pudding and sausage. Operational Forces Interface Group, U.S. Army Natick RD&E Center, Natick, MA, 4 October 1988.

102. SIKES, A. Fate of *Staphylococcus aureus* and *Listeria monocytogenes* in certain low moisture military rations during processing and storage. 50th Annual Meeting of the Institute of Food Technologists, 1989.

103. WALKER, J. E., B. J. GALLO, and F. M. ROBBINS. Soman hydrolyzing and detoxifying properties of an enzyme from a thermophilic bacterium. Proceedings of the 1988 U.S. Army Chemical Research, Development and Engineering Center Scientific Conference on Chemical Defense Research, Aberdeen Proving Ground, MD, 15-18 November 1988, pp. 689-701.

Journal Articles

104. ALLEN, A. L. and C. D. ROCHE. Effects of strain and fermentation conditions on production of cellulase by *Trichoderma reesei*. *Biotechnology and Bioengineering* 33(5): 650-656 (1989).

105. BROWNELL, K. K. and F. M. KRAMER. Behavioral management of obesity. *Medical Clinics of North America* 73(1): 185-201 (1989).

106. CARDELLO, A. V. and R. A. SEGARS. Effect of sample size and prior mastication on texture judgments. *Journal of Sensory Studies* 4(1): 1-18 (1989).

107. CHETTUR, G., J. DEFRANK, B. J. GALLO, F. C. G. HOSKIN, S. MAINER, F. M. ROBBINS, K. E. STEINMANN, and J. E. WALKER. Soman hydrolyzing and detoxifying properties of an enzyme from a thermophilic bacterium. *Fundamental and Applied Toxicology* 11: 373 (1988).

108. COHEN, S. Understanding dynamic changes in tissue. *Microscope Technology and News* 1(1): 4-5 (1989).

109. FANSELOW, M. S., L. S. LESTER, and F. J. HELMSTETTER. Changes in feeding and foraging patterns as an antipredator defensive strategy: a laboratory simulation using aversive stimulation in a closed economy. *Journal of the Experimental Analysis of Behavior* 50(3): 361-374 (1988).

110. HINTON, A. JR., M. G. DRIVER, G. J. SILVERMAN, and I. A. TAUB. Validation of the thermal sterilization of particulates processed at elevated temperatures. *Activities Report. Research and Development Associates* 41(1): 39-49 (1989).

SCIENCE AND ADVANCED TECHNOLOGY DIRECTORATE

Journal Articles (cont'd)

111. KAPLAN, D. L., J. MAYER, S. LOMBARDI, B. WILEY, and S. ARCIDIACONO. Biodegradable polymers for material applications - chitosan and pullulan. *Polymer Preprints* 30(1): 509-510 (1989).
112. KLUTER, R. Sensory engineering concepts. *Activities Report. Research and Development Associates* 41(1): 72-78 (1989).
113. KRAMER, F. M., A. J. STUNKARD, T. A. SPIEGEL, J. J. DEREN, M. G. VELCHIK, T. A. WADDEN, and K. A. MARSHALL. Limited weight losses with a gastric balloon. *Archives of Internal Medicine* 149(2): 411-413 (1989).
114. KRAMER, F. M., R. W. JEFFERY, J. L. FORSTER, and M. K. SNELL. Long-term follow-up of behavioral treatment for obesity: patterns of weight regain among men and women. *International Journal of Obesity* 13(2): 123-136 (1989).
115. MOLINE, M. L., C. P. POLLAK, D. R. WAGNER, L. S. LESTER, C. A. SALTER, and E. HIRSCH. Effects of bright light on sleep following an acute phase advance. *Sleep Research* 18: 432 (1989).
116. NARAYAN, K. A. and R. E. ANDREOTTI. Kinetics of lysine loss in compressed model systems due to Maillard reaction. *Journal of Food Biochemistry* 13(2): 105-125 (1989).
117. OH, S. K., D. L. VERY, R. ETTINGER, J. WALKER, C. GIAMPAOLO, and J. BERNARDO. Monoclonal antibody to SER immune suppressor detects polymeric forms of haptoglobin. *Hybridoma* 8(4): 449-466 (1989).
118. PORTER, W. L., E. D. BLACK, and A. M. DROLET. Use of polyamide oxidative fluorescence test on lipid emulsions: contrast in relative effectiveness of antioxidants in bulk versus dispersed systems. *Journal of Agricultural and Food Chemistry* 37(3): 615-624 (1989).
119. PRELL, P. A. Flavor profiles of 17 species of North Atlantic fish. *Journal of Food Science* 53(4): 1036-1042 (1988).
120. SALTER, C. A. Dietary tyrosine as an aid to stress resistance among troops. *Military Medicine* 154(3): 144-146 (1989).
121. VELCHIK, M. G., F. M. KRAMER, A. J. STUNKARD, and A. ALAVI. Effect of the Garren-Edwards gastric bubble on gastric emptying. *Journal of Nuclear Medicine* 30(5): 692-696 (1989).

Other Publications

122. CARDELLO, A. V., O. MALLER, and M. V. KLICKA. Computer-aided sensory evaluation of foods and beverages. In: *Applied sensory analysis of foods*. Moskowitz, E. (ed.) Boca Raton, FL: CRC Press, Inc., 1988, pp. 35-81.

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Other Publications (cont'd)

123. CLARK, W. P., M. H. MANDELS, and D. H. BALL. Specific production of alpha-, beta- and gamma-cyclodextrins by the cyclomaltodextrin glucanotransferase of *Bacillus mecerans*. In: Bioprocess engineering: the first generation. (Ellis Horwood series in biochemistry and biotechnology). Ghose, T. (ed.) Chichester, England: E. Horwood, Limited, 1989, pp. 261-275.
124. EDWARDS, J. S. A., D. E. ROBERTS, T. E. MORGAN, and L. S. LESTER. An evaluation of the nutritional intake and acceptability of the meal, ready-to-eat consumed with and without a supplemental pack in a cold environment. U.S. Army Research Institute of Environmental Medicine Technical Report T18-89, May 1989 (AD A212 078).
125. HOSKIN, F. C. G., G. CHETTUR, S. MAINER, K. E. STEINMANN, J. J. DEFRANK, B. J. GALLO, F. M. ROBBINS, and J. E. WALKER. Soman hydrolysis and detoxification properties by a thermophilic bacterial enzyme. In: Enzymes hydrolysing organophosphorus compounds. Reiner, E., W. N. Aldridge, and F. C. G. Hoskin (eds.) Chichester, England: E. Horwood, Limited, 1989.
126. KAPLAN, D. L. Biotransformation pathways of hazardous energetic organo-nitro compounds. In: Biotechnology and biodegradation. (Advances in applied biotechnology series). Woodlands, TX: Portfolio Publishing Co., 1989, pp. 155-181.
127. KRAMER, F. M. and L. A. STALKER. Treatment of obesity. In: Comprehensive handbook of cognitive therapy. Freeman, A. et al. (eds.) New York: Plenum Press, 1989, pp. 385-401.
128. REESE, E. T. Extracellular and cell-bound phosphodiesterases of fungi. In: Bioprocess engineering: the first generation. (Ellis Horwood series in biochemistry and biotechnology). Ghose, T. (ed.) Chichester, England: E. Horwood, Limited, 1989, pp. 87-92.
129. ROSE, M. S., P. C. SZLYK, R. P. FRANCESCONI, L. S. LESTER, L. ARMSTRONG, W. MATTHEW, A. V. CARDELLO, R. D. POPPER, I. SILS, G. THOMAS, D. SCHILLING, and R. WHANG. Effectiveness and acceptability of nutrient solutions in enhancing fluid intake in the heat. U.S. Army Research Institute of Environmental Medicine Technical Report T10-89, March 1989 (AD A208 428).

List of Patents

130. KIM, H.-J. and Y.-K. KIM. (FED) Rapid extrication, separation and detection method for a separate analysis of free and total sulfites in foods by ion chromatography. Patent No. 4,780,417. Issued 25 October 1988.

131. HOLTZAPPLE, M. T. and D. M. ERNST. (SATD) High efficiency, orientation-insensitive evaporator. Patent No. 4,825,661. Issued 2 May 1989.

132. MASADI, R. (IPD) Cushioning mat for use as portable bedding. Patent No. 4,868,940. Issued 26 September 1989.

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