

Volume 55

Number 4

November

1988

JOURNAL OF DAIRY RESEARCH

DAIRYING
LACTATION
FOOD

Cambridge
University
Press

JOURNAL OF DAIRY RESEARCH

Editors: M. ELISABETH SHARPE, AFRC Institute of Food Research,
Reading Laboratory, Shinfield, Reading RG2 9AT, UK

W. MANSON, Hannah Research Institute, Ayr KA6 5HL, UK

Assistant Editors: B. F. BONE, MARY C. A. GRIFFIN, C. J. WILDE

Editorial Assistants: DOROTHY SKIDMORE, B. GILLIAN DAY

Secretary: L. C. FITZGERALD

The Journal was established in 1929 as a medium for the publication of the results of original research in dairy science and cognate subjects. It is published by the Cambridge University Press.

The subscription to volume 55, 1988, of the *Journal of Dairy Research* (ISSN 0022-0299) is £88.00 UK, £92.00 elsewhere (USA and Canada US \$215.00) for a volume of four parts published quarterly in February, May, August and November. Single copies may be purchased at £23.50 net (USA and Canada US \$59.00) each, plus postage. Orders, which must be accompanied by payment, may be sent to any bookseller or to Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU. Subscribers in the USA or Canada should send their orders to Cambridge University Press, 32 East 57th Street, New York, NY 10022. Second class postage paid at New York, NY and at additional mailing offices. POSTMASTER: send address changes in USA and Canada to *Journal of Dairy Research*, Cambridge University Press, 510 North Avenue, New Rochelle, NY 10801.

© Proprietors of *Journal of Dairy Research* 1988

Copying. This journal is registered with the Copyright Clearance Center, 27 Congress Street, Salem, MA 01970. Organizations in the USA who are also registered with CCC may therefore copy material (beyond the limits permitted by sections 107 and 108 of US Copyright law) subject to payment to CCC of the per-copy fee of \$5.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 0022-0299/88 \$5.00 + .00.

ISI Tear Sheet Service, 3501 Market Street, Philadelphia, PA 19104, USA, is authorized to supply single copies of separate articles for private use only.

For all other use, permission should be sought from Cambridge or the American Branch of Cambridge University Press.

Back Volumes. Enquiries about the price and availability of back volumes should be sent to the publishers.

Claims for the replacement of journals believed to have been lost in transmission will only be entertained if made immediately upon receipt of the subsequent issue.

Index of Subjects

- Acetolactate**, production, lactic cocci, 227
Adenosine triphosphate, milk, effect of parity, stage of lactation, 49
Aeromonas hydrophila, proteinase, 97
Antitrypsin, milk, effect of parity, stage of lactation, 49
Asses, horses, zebras, milk composition, interspecies variation, 57
Bacillus subtilis, proteolytic enzyme, accelerated cheese ripening, 239
Buffalo, colostrum gels, 117
- Caesium**, complexing compound, metabolism, 1
Calving, season, milk-composition, -yield, effect on, 171
Casein(s), antimutagenic activity, pepper-induced mutagenicity, *Salmonella typhimurium*, 435 chain dynamic, effect of polyphosphate binding, 401 goat, gel electrophoretic study, 413 micelles, cross-linked by colloidal calcium phosphate, 189 pH-induced dissociation, 529 mineral acid, isoelectric precipitation, skim milk, 179 modification, reducing sugars, 539
Cheddar cheese, juice, composition, 255 ripening, accelerated, bacterial survival, 597
Cheese, ewes' milk, micrococcaceae, 271
Cheese manufacture, from concentrated ultra-filtered milk, 465
Cheese ripening, accelerated, proteolytic enzymes, 2 microbial sources, 239 La Serena, chemical, rheological characteristics, changes, 457 microflora, changes, 449 proteolysis, spectrophotometric assay, 585
Cholesterol, in milk fat, 361
Coagulation, milk proteins, heated, casein particles, size, effect of added urea, 39 pH, effect of, 205 milk, rennet, refractometric signal, 81
Colostrum gels, buffalo, 117
- Dried milk**, storage stability, high temperature, 125
- Enzymes**, *see also individual names* milk-clotting, identification, 221
Equids, milk composition, variation, 57
Ewes, milk, cheese, micrococcaceae, 269 ripening, chemical, rheological characteristics, changes, 457 microflora, changes, 449 contamination, cows milk, detection, 121 production, glutathione levels, 345
- Fat**, analysis, milk, reference milk system, 355 content, milk, factors affecting, 171
- Filled cheese**, oils, determination, modified rapid Gerber method, 113
Friesian Jersey cows, milk-composition, -yield, comparison, 171
- Goats**, California Mastitis Test, 309 casein, gel electrophoretic study, 413 mammary gland, milk, distribution, 41 milk production, pregnant, mated out of season, 487
Growth hormone, lactation, effect on composition, milk, sheep, 479
- Heat stability**, *see Coagulation*, milk proteins, heated
Heat treatment, milk, heated surfaces, interface energetics, 551 UHT, forewarning, deposit formation, milk, quality, 563
Horses, zebras, asses, milk composition, interspecies variation, 57
- Kluyveromyces marxianus**, thermostability, milk, 423
- La Serena**, ewes' milk cheese, ripening, chemical, rheological characteristics, changes, 457 microflora, changes, 449
Lactation, sheep, growth hormone, effect of, 479 stage, milk-composition, -yield, effect on, 171 parity, effect on adenosine triphosphate, somatic cell count, antitrypsin content, milk, 49
- Lactic cultures**, whey proteins, denaturation, 443
Lactobacillus helveticus, proteolytic enzyme, accelerated cheese ripening, 239
β-Lactoglobulin, κ-casein, interaction, heated, 67
Lactose, content, milk, factors affecting, 171
Leuconostoc spp., acetylactate production, 227
Lipolysis, UHT treatment, milk, 373
Listeria spp., recovery, dairy products, agar media, 579
- Machine milking**, teat cups, non-return valves, comparison, conventional clusters, 505 increased vacuum, 495
Mammary gland, *see also Udder* goats, protein metabolism, 143 lysosomal enzymes, epithelial tissues, 339 teat canal, xanthine oxidase, antibacterial, 25
Mastitis, control, multi-valved milking machine, value, 155 goats, California, test, 309
Staphylococcus aureus, killed, neutrophils, effect of oxygen concentration, milk, 513 therapy trials, errors, 315
- Milk(s)**, alkaline proteinase (review), 609 fermented, technological aspects (review), 281 quality, UHT treated, 563 reference system, fat, protein, measurement, 355
- Milk composition**, assessment, variation, 109

Index of Subjects

- Milk composition (cont)**
equids, variation, 57
fat, protein, lactose, factors affecting, 171
- Milk fat**, breakdown, *see Lipolysis*
cholesterol, distribution, 361
- Milk powders**, *see Dried milk*
- Milk processing**, fouling, microfiltration membrane, 381
yeast lactase, thermostability, 423
- Milk production**, ewes, glutathione levels, 345
goats, pregnant, mated out of season, 487
- Milk protein(s)**, analysis, reference milk system, 355
breakdown, *see Proteolysis*
factors affecting, 171
- Milk yield**, factors affecting, 171
- Milking**, bacterial contamination, milk, 33
by machine, teat apex, thickness, changes, 331
hydraulic, milking conditions, influence, 15
- Milking machine**, multi-valved, udder infection, control, 155
- Milking time**, milk-composition, -yield, effect on, 171
- Myzithra cheese**, quality, whey protein retention, 247
- Plastein**, synthesis, whey proteins, cheese manufacture, 547
- Proteinase**, from *Aeromonas hydrophila*, 97
from *Pseudomonas fluorescens*, purification, 217
- Proteins**, *see also Milk proteins*
metabolism, mammary gland, goats, 143
- Proteolysis**, UHT treatment, milk, 373
- Pseudomonas fluorescens** AH-70, heat stable proteinase, purification, 217
- Rennet**, coagulation, milk, heated, pH adjustment, influence, 205
refractometric signal, 81
- Renneting**, kinetics, 521
- Scanning electron microscopy**, study, fouling, membrane, milk processing, 381
- Skim milk**, acid casein precipitation, kinetics, 179
pH, effect of temperature, 277
- Somatic cell count**, cream, whipping properties, 89
milk, effect of parity, stage of lactation, 49
- Staphylococcus aureus**, detection, teat canal, 603
killed, neutrophils, effect of oxygen concentration, milk, 513
- Streptococcus diacetylactis**, acetolactate production, 227
- S. salivarius*, subsp. *thermophilus*, production, 569
- Teat**, apex, thickness, changes, machine milking, 331
canal, inflammation, detection, N-acetyl- β -glucosaminidase, 603
- Teat cups**, non-return valves, comparison, conventional teat cups, 505
increased vacuum, 495
- Udder**, infection, control, multi-valved milking machine, 155
- UHT treatment**, milk, lipolysis, proteolysis, 373
products, storage stability, high temperature, 125
- Whey proteins**, cheese manufacture, plastein synthesis, 547
denaturation, lactic cultures, 443
emulsifying capacity, 197
retention, Myzithra cheese, 247
- Whipping**, properties, cream, somatic cell count, influence, 89
- Xanthine oxidase**, teat canal, antibacterial, 25
- Yeast lactase**, thermostability, milk, 423
- Zebras** horses, asses, milk composition, interspecies variation, 57

Index of Authors

- ACCIAIOLI, A., 345
ADDEO, F., 413
AITCHISON, T., 109
ALICHANIDIS, E., 97
ANDERSON, M., 89
ANDREWS, R. J., 495, 505
AOKI, T., 189
ARDÖ, Y., 239
ARNAUD, M. J., 1
ARUL, J., 361
ASENSIO, M. A., 217
ÅSTRÖM, G., 49
AZCONA, J. I., 217
- BANKS, J. M., 255
BARRY, A., 205
BAUTISTA, L., 597
BENNASAR, M., 381
BHAT, G. S., 443
BLANCO, J. L., 579
BLATCHFORD, D. R., 41
BLUM, J., 1
BOLLA, P., 345
BOUDREAU, A., 361
BOULET, M., 551
BOURNE, F. J., 513
BOYAVAL, P., 569
BRAMLEY, A. J., 25, 33, 155
BRIONES, V., 579
BRITTEN, M., 551
BROOKER, B. E., 255
BROWN, M. R., 505
BUCKY, A. R., 373
- CAROLI, A., 345
CLARKE, T., 355
CLEMENT, C., 1
COGAN, T. M., 227
COLAS, B., 539
COLLINS, R. C., 25
CORRE, C., 569
CRAVEN, N., 513
- DALGLEISH, D. G., 521, 529
DI LUCCIA, A., 413
DODD, F. H., 315
DOMINGUEZ, L., 579
DUFFY, G. G., 179
- EMANUELSON, U., 49
EVANS, E. W., 197
- FERNANDEZ DEL POZO, B., 449, 457
FERNÁNDEZ, J. F., 579
FIELD, T. R., 25
FLEET, I. R., 143, 479
FLYNN, A., 205
FOX, P. F., 205, 609
FROST, A. J., 339
FULLERTON, F. M., 479
- GARCÍA, M. C., 269
GARCÍA, M. L., 269
GARCÍA, M. R., 269
GAYA, P., 449, 457
GETAZ, F., 1
GIESE, W., 1
GLUCKMAN, P. D., 479
GOBIN, C., 539
GREEN, M. L., 551
GRENIER, B., 361
GRIFFIN, T. K., 155
GRINDAL, R. J., 15, 155
GRUFFERTY, M. B., 609
- HAMANN, J., 331
HAQUE, Z., 67
HART, I. C., 479
HAYES, P. R., 373
HEAP, R. B., 479
HEFNAWY, S. A., 113
HEMINGWAY, R. G., 109
HERNÁNDEZ, P. E., 217
HOLMBERG, O., 49
HOLT, C., 255
HOSONO, A., 435
- IMAMURA, T., 189
- JABLONKA, M. S., 179
JENNESS, R., 57
JENSEN, N. E., 603
JORDAN, K. N., 227
- KAARTINEN, L., 603
KAKO, Y., 189
KEEN, P. M., 513
KINSELLA, J. E., 67
KIRBY, S., 89
KLAEBE, A., 401
KNIGHT, C. H., 487
KOROLCZUK, J., 81
KROLL, R. G., 597
KULKARNI, P. R., 117
- LACABANNE, C., 401
LAMURE, A., 401
LANGLEY, K. R., 197
LAW, A. J. R., 529
LINDSAY, D. B., 143
LONGONE, V., 547
LORIENT, D., 539
- McKINNON, C. H., 33
MAHONEY, R. R., 423
MAISI, P., 309
MAKHLOUF, J., 361
MANSON, W., 255
MARTÍN, R., 217
MATTILA, T., 49, 339
MAUBOIS, J.-L., 81

Index of Authors

- MAURIELLO, R., 413
MAYER, S. J., 513
MEDINA, M., 449, 457
MEIN, G. A., 331, 495, 505
MEPHAM, T. B., 479
MILLARD, D., 197
MOERMANS, R., 563
MORANT, S. V., 33, 315
MORENO, B., 269
MORRIS, H. A., 255
MOTTAR, J., 563
MUNRO, P. A., 179
NATZKE, R. P., 315
NEEDS, E. C., 89
NUÑEZ, M., 449, 457
O'BOYLE, D., 339
ODDY, V. H., 143
OFTEDAL, O. T., 57
OLSSON, T., 49
OTANI, H., 435
OTERO, A., 269
PAGNACCO, G., 345
PAPPAS, C., 247
PAQUIN, P., 551
PARSONS, K. R., 25
PEAKER, M., 41
PÉRIE, J.-J., 401
PETTERSSON, H.-E., 239
PIMPLE, N. V., 117
POLYCHRONIADOU, A., 585
POMMERT, J.-F., 401
PRIGENT, C., 569
RENNER, E., 125
RIIPINEN, L., 309
RIZZI, R., 345
ROBINSON, D. S., 373
RODRÍGUEZ-MARÍN, M. A., 449, 457
SANZ, B., 217
SCHOENEGGE, R., 1
SCIANCALEPORE, V., 547
SHALABI, S. I., 205
SHARABY, M. A., 171
SHASHIKANTH, K. N., 435
SINGH, H., 205
SUÁREZ, G., 579
TANNHAUSER, F., 1
TARDIF, R., 361
TARODO DE LA FUENTE, B., 381
VAITHEESWARAN, N. I., 443
VETIER, C., 381
VOUTSINAS, L., 247
WATERMAN, A. E., 513
WILDE, C. J., 487
WILDER, T., 423
WILLIAMS, D. M., 495
YAMADA, N., 189