Multivariate data analysis of two-dimensional gel electrophoresis protein patterns from few samples

One application of 2D gel electrophoresis is to reveal differences in protein pattern between two or more groups of individuals, attributable to their group membership. Multivariate data analytical methods are useful in pinpointing the spots relevant for discrimination by focusing not only on single spot differences, but on the covariance structure between proteins. However, their outcome is dependent on data scaling, and they may fail in producing valid multivariate models due to the much higher number of "irrelevant" spots present in the gels. The case where only few gels are available and where the aim is to find as many as possible of the group-dependent proteins seems particularly difficult to handle. The present paper investigates such a case regarding the effect of scaling and of prefiltering by univariate nonparametric statistics on the selection of spots. Besides, a modified 'autoscaling' of the full data set based on within-group standard deviations is introduced and shown to be advantageous in revealing potential group-dependent proteins additional to those found by prefiltering.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Aquatic Process and Product Technology
Authors: Jensen, K. N. (Intern), Jessen, F. (Intern), Jørgensen, B. (Intern)
Pages: 1288-1296
Publication date: 2008
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of Proteome Research
Volume: 7
Issue number: 3
ISSN (Print): 1535-3893
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 4.34 SJR 1.705 SNIP 1.002
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): SJR 1.934 SNIP 1.092 CiteScore 4.45
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): SJR 1.945 SNIP 1.185 CiteScore 4.64
Web of Science (2014): Indexed yes
Fatty acid composition of herring (Clupea harengus L.): influence of time and place of catch on n-3 PUFA content

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Aquatic Lipids and Oxidation, Section for Aquatic Protein Biochemistry
Authors: Jensen, K. N. (Intern), Jacobsen, C. (Intern), Nielsen, H. H. (Intern)
Pages: 710-718
Publication date: 2007
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of the Science of Food and Agriculture
Volume: 87
Issue number: 4
ISSN (Print): 0022-5142
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.48 SJR 0.87 SNIP 1.222
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Multivariate analysis of 2-DE protein patterns - Practical approaches

Practical approaches to the use of multivariate data analysis of 2-DE protein patterns are demonstrated by three independent strategies for the image analysis and the multivariate analysis on the same set of 2-DE data. Four wheat varieties were selected on the basis of their baking quality. Two of the varieties were of strong baking quality and hard wheat kernel and two were of weak baking quality and soft kernel. Gliadins at different stages of grain development were analyzed by the application of multivariate data analysis on images of 2-DEs. Patterns related to the wheat varieties, harvest times and quality were detected on images of 2-DE protein patterns for all the three strategies. The use of the multivariate methods was evaluated in the alignment and matching procedures of 2-DE gels. All the three strategies were
able to discriminate the samples according to quality, harvest time and variety, although different subsets of protein spots were selected. The explorative approach of using multivariate data analysis and variable selection in the analyses of 2-DEs seems to be promising as a fast, reliable and convenient way of screening and transforming many gel images into spot quantities.

**General information**

State: Published

Organisations: Section for Aquatic Lipids and Oxidation, National Institute of Aquatic Resources, Enzyme and Protein Chemistry, Department of Systems Biology, Section for Aquatic Protein Biochemistry, Section for Aquatic Process and Product Technology, Center for Microbial Biotechnology, Norwegian Food Research Institute


Pages: 1289-1299

Publication date: 2007

Main Research Area: Technical/natural sciences

**Publication information**

Journal: Electrophoresis

Volume: 28

Issue number: 8

ISSN (Print): 0173-0835

Ratings:

BFI (2018): BFI-level 1

Web of Science (2018): Indexed yes

BFI (2017): BFI-level 1

Web of Science (2017): Indexed yes

BFI (2016): BFI-level 1

Scopus rating (2016): CiteScore 2.64 SJR 0.85 SNIP 0.777

Web of Science (2016): Indexed yes

BFI (2015): BFI-level 1

Scopus rating (2015): SJR 0.851 SNIP 0.825 CiteScore 2.53

BFI (2014): BFI-level 1

Scopus rating (2014): SJR 1.056 SNIP 0.892 CiteScore 2.88

BFI (2013): BFI-level 1

Scopus rating (2013): SJR 1.154 SNIP 0.992 CiteScore 3.13

ISI indexed (2013): ISI indexed yes

Web of Science (2013): Indexed yes

BFI (2012): BFI-level 1

Scopus rating (2012): SJR 1.368 SNIP 0.983 CiteScore 3.24

ISI indexed (2012): ISI indexed yes

Web of Science (2012): Indexed yes

BFI (2011): BFI-level 1

Scopus rating (2011): SJR 1.525 SNIP 0.923 CiteScore 3.17

ISI indexed (2011): ISI indexed yes

Web of Science (2011): Indexed yes

BFI (2010): BFI-level 1

Scopus rating (2010): SJR 1.591 SNIP 0.932

Web of Science (2010): Indexed yes

BFI (2009): BFI-level 1

Scopus rating (2009): SJR 1.481 SNIP 1.014

Web of Science (2009): Indexed yes

BFI (2008): BFI-level 1

Scopus rating (2008): SJR 1.692 SNIP 0.991

Web of Science (2008): Indexed yes

Scopus rating (2007): SJR 1.817 SNIP 1.109

Scopus rating (2006): SJR 2.142 SNIP 1.243

Web of Science (2006): Indexed yes
**Variable selection in the analysis of proteome data. Removal of irrelevant variables prior to a Jack-knife procedure**

**General information**
State: Published
Organisations: National Institute of Aquatic Resources, Section for Aquatic Protein Biochemistry, Section for Aquatic Process and Product Technology
Authors: Jensen, K. N. (Intern), Jessen, F. (Intern), Jørgensen, B. (Intern)
Publication date: 2007
Main Research Area: Technical/natural sciences

**Bibliographical note**

**Water distribution in smoked salmon**

**General information**
State: Published
Organisations: National Institute of Aquatic Resources, Section for Aquatic Process and Product Technology
Authors: Løje, H. (Intern), Green-Petersen, D. (Intern), Nielsen, J. (Intern), Jørgensen, B. (Intern), Jensen, K. N. (Intern)
Pages: 212-217
Publication date: 2007
Main Research Area: Technical/natural sciences

**Publication information**
Journal: Journal of the Science of Food and Agriculture
Volume: 87
Issue number: 2
ISSN (Print): 0022-5142
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.48 SJR 0.87 SNIP 1.222
Web of Science (2016): Indexed yes
Water distribution and mobility in fish products in relation to quality

General information
State: Published
Organisations: Section for Aquatic Process and Product Technology, National Institute of Aquatic Resources
Authors: Jørgensen, B. (Intern), Jensen, K. N. (Intern)
Water distribution and mobility in herring muscle in relation to lipid content, season, fishing ground and biological parameters

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Aquatic Process and Product Technology, Section for Aquatic Protein Biochemistry
Authors: Jensen, K. N. (Intern), Jørgensen, B. (Intern), Nielsen, H. H. (Intern), Nielsen, J. (Intern)
Pages: 1259-1267
Publication date: 2005
Main Research Area: Technical/natural sciences

Publication information
Journal: Journal of the Science of Food and Agriculture
Volume: 85
Issue number: 8
ISSN (Print): 0022-5142
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 2.48 SJR 0.87 SNIP 1.222
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): SJR 0.813 SNIP 1.088 CiteScore 2.11
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): SJR 0.819 SNIP 1.153 CiteScore 2.1
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): SJR 0.846 SNIP 1.224 CiteScore 2.22
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): SJR 0.891 SNIP 1.129 CiteScore 1.9
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): SJR 0.757 SNIP 1.003 CiteScore 1.61
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
Scopus rating (2010): SJR 0.775 SNIP 0.894
Web of Science (2010): Indexed yes
Quality of fish in relation to muscle water: Application of differential scanning calorimetry, low-field nuclear magnetic resonance and multivariate data analysis

General information
State: Published
Organisations: Food Biotechnology and Engineering Group
Authors: Jensen, K. N. (Intern)
Number of pages: 155
Publication date: 2004

Publication information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 155034
Publication: Research › Ph.D. thesis – Annual report year: 2004

A consumer view of frozen fish

General information
State: Published
Organisations: Section for Aquatic Process and Product Technology, National Institute of Aquatic Resources
Authors: Nielsen, J. (Intern), Listov-Saabye, F. (Ekstern), Jensen, K. N. (Intern)
Number of pages: 400
Publication date: 2003

Host publication information
Title of host publication: TAFT 2003 : First joint trans Atlantic fisheries technology conference, 10-14 June 2003 Reykjavik, Iceland : 33rd WEFTA meeting
Place of publication: Reykjavik
Publisher: The Icelandic Fisheries Laboratories
Main Research Area: Technical/natural sciences
Conference: 1st joint trans Atlantic fisheries technology conference: 33rd WEFTA meeting, Reykjavik, Iceland, 10/06/2003 - 10/06/2003
Effect of storage conditions on differential scanning calorimetry profiles from thawed cod muscle

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Aquatic Process and Product Technology
Authors: Jensen, K. N. (Intern), Jørgensen, B. (Intern)
Pages: 807-812
Publication date: 2003
Main Research Area: Technical/natural sciences

Publication information
Journal: Lebensmittel-Wissenschaft und Technologie
Volume: 36
Issue number: 8
ISSN (Print): 0023-6438
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.31
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 3.11
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 3.12
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 3.11
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 3.12
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 3.18
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
BFI (2009): BFI-level 1
BFI (2008): BFI-level 2
Web of Science (2008): Indexed yes
Web of Science (2005): Indexed yes
Web of Science (2004): Indexed yes
Web of Science (2003): Indexed yes
Web of Science (2002): Indexed yes
Web of Science (2001): Indexed yes
Web of Science (2000): Indexed yes
Original language: English
Source: orbit
Source-ID: 225986
Low-temperature transitions in cod and tuna determined by differential scanning calorimetry

Differential scanning calorimetry measurements have revealed different thermal transitions in cod and tuna samples. Transition temperatures detected at -11°C, -15°C, and -21°C were highly dependent on the annealing temperature. In tuna muscle, an additional transition was observed at -72°C. This transition appeared differently than the thermal events observed at higher temperatures, as it spanned a broad temperature interval of 25°C. The transition was comparable to low-temperature glass transitions reported in protein-rich systems. No transition at this low temperature was detected in cod samples. The transitions observed at higher temperatures (-11°C to -21°C) may possibly stem from a glassy matrix containing muscle proteins. However, the presence of a glass transition at -11°C was in disagreement with the low storage stability at -18°C during practical time scales. It was proposed that freezing of cod could be associated with more than one glass transition, with a glass transition at a temperature lower than -11°C being too small to be detectable with the instrument, yet governing important deterioration processes. In order to optimize frozen storage conditions, the relationship between deterioration processes important for preservation of quality and glass transition temperatures still needs to be established. (C) 2003 Swiss Society of Food Science and Technology. Published by Elsevier Science Ltd. All rights reserved.

General information
State: Published
Organisations: National Institute of Aquatic Resources, Section for Aquatic Process and Product Technology
Authors: Jensen, K. N. (Intern), Jørgensen, B. (Intern), Nielsen, J. (Intern)
Pages: 369-374
Publication date: 2003
Main Research Area: Technical/natural sciences

Publication information
Journal: Lebensmittel-Wissenschaft und Technologie
Volume: 36
Issue number: 3
ISSN (Print): 0023-6438
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Web of Science (2017): Indexed Yes
BFI (2016): BFI-level 1
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2016): CiteScore 3.31
Web of Science (2016): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2015): CiteScore 3.11
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 3.12
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 3.11
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 3.12
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 3.18
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 1
BFI (2009): BFI-level 1
BFI (2008): BFI-level 2
Three-way modelling of NMR relaxation profiles from thawed cod muscle

Low-field 1H nuclear magnetic resonance transverse relaxation was used to measure water mobility and distribution in cod stored at -20°C or -30°C for up to 12 months and subsequently from 0 to 21 days in modified atmosphere at +2°C. The relaxation profiles were decomposed by parallel factor analysis resulting in four first-order relaxation curves from which the relative water pool sizes and the transverse relaxation times (T2) were calculated. The T2-values of the four identified water pools were 37 ms, 56 ms, 126 ms and 361 ms, respectively. The relative size of the water pools, but not the relaxation times, depended on the frozen storage temperature and on the chilled storage period.
Selection and application of quality indicators to describe quality changes in thawed cod

General information
State: Published
Organisations: National Institute of Aquatic Resources, Department of Informatics and Mathematical Modeling, Section for Aquatic Process and Product Technology
Authors: Jensen, K. N. (Intern), Guldager, H. S. (Intern), Jacobsen, G. (Ekstern), Nielsen, J. (Intern)
Publication date: 2001

Host publication information
Title of host publication: Proceedings of Rapid Cooling of Food 28-30 March, Bristol, United Kingdom
Main Research Area: Technical/natural sciences
Conference: Rapid Cooling of Food, Bristol, United Kingdom, 28-30 March, 01/01/2001
Source: orbit
Source-ID: 231624
Publication: Research › Article in proceedings – Annual report year: 2001

Projects:

Kvalitet af muskelbaserede fiskeprodukter
Department of Systems Biology
Period: 01/10/1998 → 17/05/2004
Number of participants: 7
Phd Student: Jensen, Kristina Nedenskov (Intern)
Quality indicators for frozen fish
An important factor for efficient utilisation of the resources of fish is quality assurance in the chain from catch to consumer. Freezing is an effective method for preserving fat and lean fish. In order to reduce the quality loss during processing, storing and distribution it is necessary to obtain better knowledge of the biochemical shelf life indicators of the different species. It is important to create a system of traceability of the fish through the chain for the benefit of the consumer. On the background of the obtained knowledge in the project the objective is to construct a model for labelling of quality, prediction of shelf life and utilisation and to obtain a better freezing stability. The aim is to give guidelines for the optimum handling of fish prior to freezing, the optimum freezing-, storage- and thawing conditions and to collect data necessary for prediction of a production of thawed fish packed in MAP based on raw material frozen-at-sea. The effect of season, catch handling, cold/chilled storage period and temperature is examined.