



MAX-PLANCK-GESELLSCHAFT



TECHNISCHE
UNIVERSITÄT
MÜNCHEN

THE GEORGE
WASHINGTON
UNIVERSITY
LAW SCHOOL
WASHINGTON DC

MIPLC Studies

Edited by

Prof. Dr. Christoph Ann,
Technische Universität München

Prof. Robert Brauneis,
The George Washington University Law School

Prof. Dr. Thomas M.J. Möllers,
University of Augsburg

Prof. Dr. Dres. h.c. Joseph Straus,
Max-Planck-Institute for Intellectual Property,
Competition and Tax Law

Volume 1

Eva Willnegger

Patents in the Food Sector

A Retrospective with Special Emphasis on the TRIPs Agreement



Nomos

MIPLC Munich
Intellectual München
Property Washington DC
Law Center

Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie; detaillierte bibliografische Daten sind im Internet über <http://www.d-nb.de> abrufbar.

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at <http://www.d-nb.de>.

Zugl.: München, Univ., Diss., 2008

ISBN 978-3-8329-3636-5

1. Auflage 2008

© Nomos Verlagsgesellschaft, Baden-Baden 2008. Printed in Germany. Alle Rechte, auch die des Nachdrucks von Auszügen, der fotomechanischen Wiedergabe und der Übersetzung, vorbehalten. Gedruckt auf alterungsbeständigem Papier.

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically those of translation, reprinting, re-use of illustrations, broadcasting, reproduction by photocopying machine or similar means, and storage in data banks. Under § 54 of the German Copyright Law where copies are made for other than private use a fee is payable to »Verwertungsgesellschaft Wort«, Munich.

PREFACE

My special thanks are directed to Prof. Dr. Dres.h.c. Joseph Straus, director of the Max Planck Institute for Intellectual Property, Competition and Tax Law in Munich, who supervised this dissertation. After I studied Crop Sciences, Prof. Straus also gave me the opportunity to familiarize myself with the legal aspects of agriculture, especially patent law. He fostered my studies by means of a generous research scholarship of the Max Planck Society. Prof. Straus made it possible for me to participate in international conferences concerning the protection of biotechnological inventions and plant varieties. His expertise in the field of patent law inspired me to a great extent in writing several articles in this area.

I am most obliged to PD Dr. Ulrich Schmoch, director of the Fraunhofer Institute for Systems and Innovation Research in Karlsruhe, for helping me to collect the data on food-related patent applications.

Moreover, I would like to thank Dr. Friedrich Baumbach, patent attorney in Berlin, who patiently supervised my first steps in patent law.

Furthermore, I would like to thank Prof. Dr. Rudolf Nirk, lawyer at the Federal Court of Justice in Karlsruhe, for his extremely valuable advice and motivation.

My final thanks are directed to Prof. Dr. Jürgen F. Strube, Chairman of the Supervisory Board of BASF SE, for his extraordinary support relating to my future career.

The most important contribution to this thesis, however, has been provided by my husband Ludwig. Without him I definitely would not be in the position in which I am today.

Heidelberg, June 18, 2008

Eva Willnegger

Contents

Abbreviations	13
Index of Tables	15
German Index of Tables	16
Introduction	17
Part I. Patentability of food from 1877 to 2005 in Germany compared to Brazil, China, and India	19
A. Patentability of food in Germany	20
I. The exemption in the German Patent Act of 1877	20
1. German Patent Act of 1877	20
2. The scope of the exemption	22
3. Reactions to the exemption	24
II. The Amending Act of 1891 and the <i>Kongorot</i> decision	26
III. The patentability of food in the Amending Act of 1967	28
IV. Consequences of the patentability of food in Germany	30
1. Food-related patent applications in the technological and economic sense	31
2. Rise in food-related German patent applications	36
a. Overview	36
b. Dairy and confectionary	37
c. Feed	38
d. Plants	38
3. Rise in food biotechnology-related German patent applications	41
a. Overview	41
b. Plant biotechnology	42
c. Feed biotechnology	43
d. Biotechnology in other segments of the food sector	43
4. Development of the German food sector and food prices	47
V. Assessment of the exemption in Germany from 1877 to 1967	48
B. Patentability of food under the TRIPs Agreement	51
I. Negotiations with respect to food	53
1. The approach of India	55
2. The approach of Brazil	56
3. The approach of the U.S.	56
4. The approach of the European Communities	57
5. Further negotiations	57
6. Intermediate result	59

7. Summary	61
II. Contents with respect to food	63
III. Consequences	66
C. Patentability of food in Brazil, China, and India	67
I. Implementation of the TRIPs Agreement in Brazil	67
II. Implementation of the TRIPs Agreement in China	69
III. Implementation of the TRIPs Agreement in India	71
IV. Consequences of the patentability of food-related substances	75
1. Rise of food-related patent applications	75
2. Rise of food biotechnology-related patent applications	77
3. Development of the food sector and food prices in Brazil	79
4. Development of the food sector and food prices in China	81
5. Development of the food sector and food prices in India	83
D. Nestlé and patentability of food	85
E. Assessment	89
Part II. Innovation in today's food sector	91
A. Innovation related to the production of agricultural raw materials	92
I. Innovation related to the production of plant-derived agricultural raw materials	93
II. Innovation related to the production of animal-derived agricultural raw materials	99
B. Innovation related to the production of processed food	101
I. Use of microorganisms in the production of processed food	101
II. Functional food	106
III. Nutraceuticals	109
C. Consumer acceptance of innovation in the food sector	110
Part III. Intellectual property situation of today's food sector	115
A. Protection of inventions related to the production of plant-derived raw materials	115
I. Protection under the plant variety protection system	116
1. Plant variety as protectable subject matter	116
2. Conditions of protection	117
3. Scope of protection	119

a.	Essentially derived plant varieties	120
b.	Exemptions to plant variety protection	121
4.	Assessment	122
II.	Protection under the Patent System	123
1.	Scope of protection	124
2.	Term of protection	124
3.	Limitations of protection	127
a.	Research exemption and plant breeders' exemption	127
b.	Farm-saved seed and coincidental production	129
c.	Compulsory license	130
4.	Assessment	131
III.	Increase in patent applications for non-genetically modified plants	131
1.	European patent on herbicide-resistant rice	132
2.	Exemption to patentability of essentially biological processes and patentability of artificially induced mutation	134
3.	Assessment	134
B.	Protection of inventions related to the production of animal-derived raw materials	136
C.	Protection of inventions related to the production of processed food	136
I.	Patentability of savor nuances	137
II.	Food as a macromolecular substance and product-by-process claims	138
1.	Patentability of product-by-process claims	139
2.	The scope of product-by-process claims	140
a.	The scope of product-by-process claims in Europe	141
b.	The scope of product-by-process claims in the U.S.	142
aa.	The <i>Scripps</i> decision	142
bb.	The <i>Atlantic</i> decision	143
III.	Food as the product directly obtained by a patented process	147
1.	Comparison with the protection by product-by-process claims	147
2.	The product directly obtained by a process	148
3.	Interpretation of “directly obtained”	148
a.	Narrow interpretation: chronological approach	148
b.	Broad interpretation: parameter approach	149
4.	Interpretation applicable to food-related inventions	150
a.	Literal interpretation	150
b.	Legislative history of Art. 64(2) EPC	150
c.	Systematic interpretation	152
d.	Teleological interpretation	152
e.	Parameter approach appropriate	153
5.	Burden of proof with regard to the product directly obtained by a process	153
6.	Biological inventions	153
7.	Case study on food products obtained by a patented process	154

a. The biscuit patent – EP 445 929	155
aa. Background	155
bb. The invention of the biscuit patent	155
cc. Claims and claim interpretation	156
dd. Impacts for products obtained from the biscuit patent technology	157
b. Herbicide-tolerant plants – EP 546 090	158
aa. Background	158
bb. Technology underlying the patent	158
cc. Scope with respect to Art. 64(2) EPC	159
c. Patent on transformation technology – EP 270 615	160
aa. Background	161
bb. The <i>Moloney</i> patent and its scope	162
8. Summary on Art. 64(2) EPC	164
D. Summary	165
Final Summary	166

Zusammenfassung in deutscher Sprache

Patente in der Nahrungs- und Genussmittelindustrie – Eine Retrospektive unter besonderer Berücksichtigung des TRIPs Übereinkommens	167
Einleitung	167
Teil I: Die Patentierbarkeit von Nahrungsmitteln im Zeitraum von 1877 bis 2005 in Deutschland im Vergleich zu Brasilien, China und Indien	168
A. Die Patentierbarkeit von Nahrungsmitteln in Deutschland	168
I. Der Patentierungsausschluss und seine Abschaffung	168
II. Die Folgen der Patentierbarkeit von Nahrungsmitteln	170
B. Die Patentierbarkeit von Nahrungsmitteln unter dem TRIPs Übereinkommen	178
I. Rechtlicher Rahmen	180
II. Folgen der Patentierbarkeit von Nahrungsmitteln	181
C. Nestlé und die Patentierbarkeit von Nahrungsmitteln	185
D. Beurteilung	187
Teil II: Innovation im heutigen Nahrungsmittelsektor	188
Teil III: Die Schutzrechtssituation des Nahrungsmittelsektors	189
A. Schutz von pflanzenbezogenen Erfindungen unter dem Sortenschutz	189
B. Schutz von pflanzenbezogenen Erfindungen unter dem Patentrecht	189
C. Schutz von Erfindungen in der Nahrungsmittelverarbeitung	190
Zusammenfassung	192
Literature	193

