การทำงานวิจัยร่วมกับภาคเอกชนอย่างมืออาชีพ

วรรณพ วิเศษสงวน

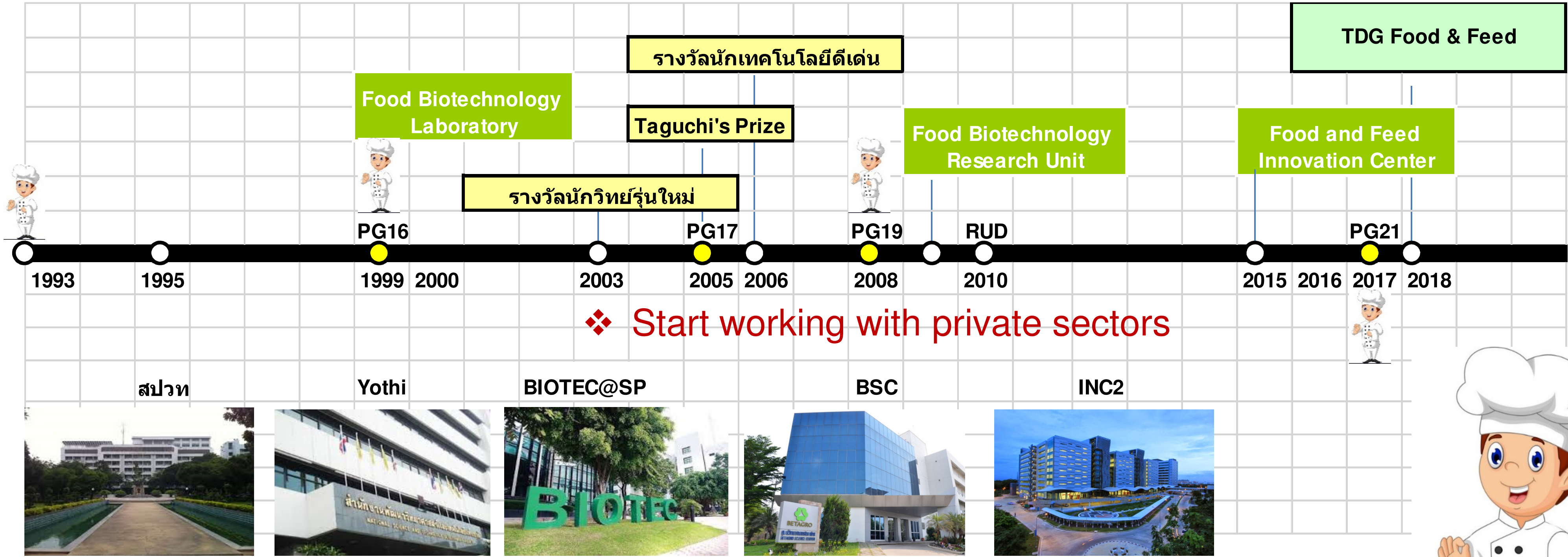
Food Biotechnology Research Team,

Functional Ingredients and Food Innovation Research Group,

National Center for genetic Engineering and Biotechnology (BIOTEC), National Science and Technology Development Agency (NSTDA)

March 3, 2020

25 Years 8 Months 15 Days @ NSTDA

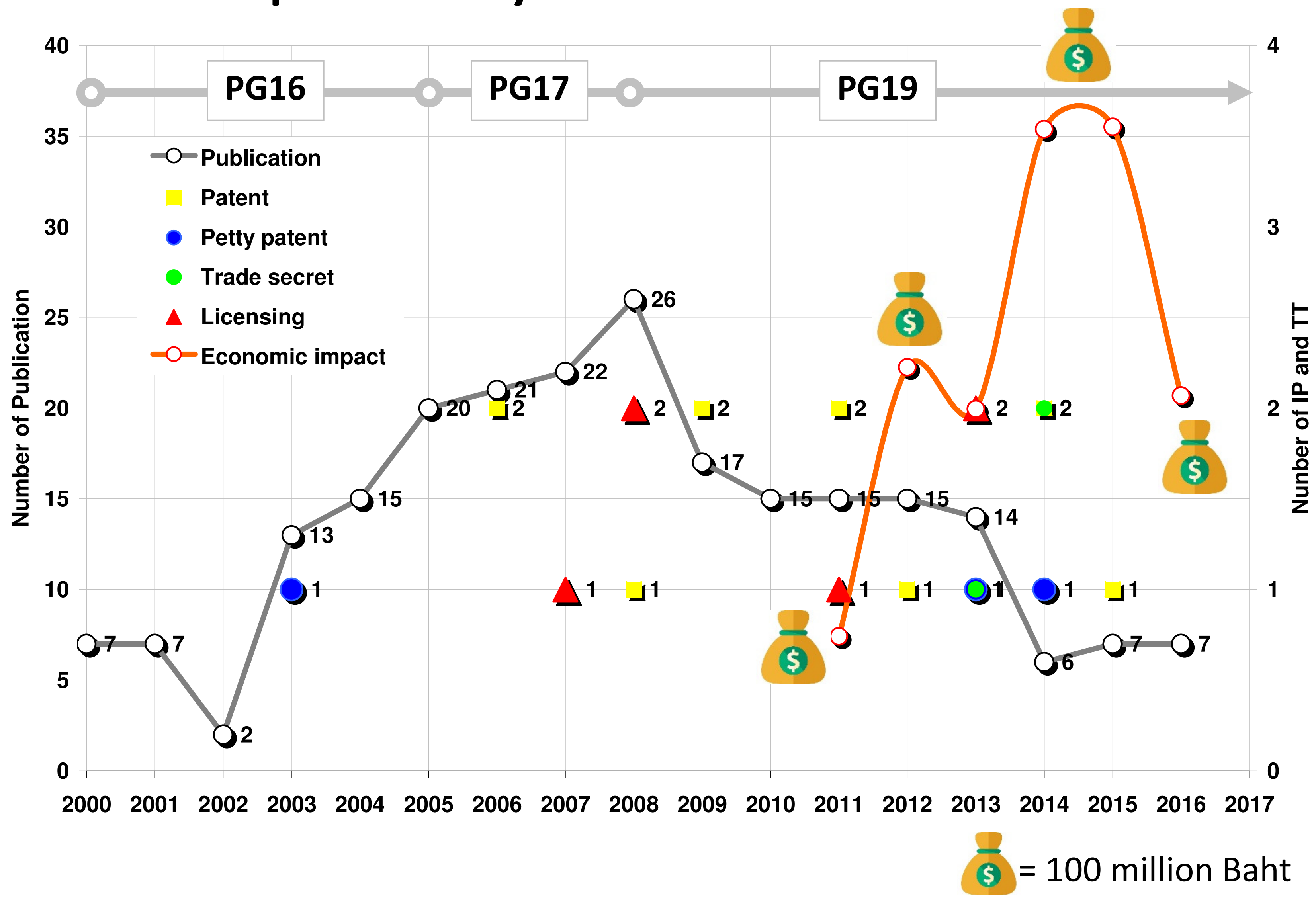


Facts & Figures

Publications: 246
Petty patent: 12
Projects with private sectors: 30
Licensing: 8

H index: 50
Patents: 14
Trade secret: 10
Economic impacts: 1500 million B

Research productivity 2000-2017



ชื่อผลงาน/เทคโนโลยีที่สร้างผลกระทบ		2562 ล้านบาท	รวม 2557 -2562 ล้านบาท
อาหาร	การพัฒนากระบวนการเร่งหมักน้ำปลาโดยใช้เอนไซม์		14.88
	สูตรเชื้อจุลินทรีย์ในการผลิตต้นเชื้อแหนมและการใช้ต้นเชื้อจุลินทรีย์ใน การหมักแหนม		76.47
	การหมักผักกาดเขียวปลีด้วยต้นเชื้อ *L. plantarum*		0.72
	การศึกษาสมบัติทางกายภาพและสมบัติทางเคมีของไข่	23.60	66.50
	การผลิตน้ำส้มสายชูหมักจากมังคุด		0.68
	การพัฒนากระบวนผลิตชีวมวลของเชื้อจุลินทรีย์โพรไบโอติก *Lactobacillus paracasei* SD1 ให้ได้ปริมาณสูง	0.09	0.09
อาหารสัตว์	เทคโนโลยีกระบวนการผลิตเอนไซม์เพนโตซาเนสจากเชื้อราสายพันธุ์ *Aspergillus* sp.BCC7178 เพื่อใช้ในอุตสาหกรรมอาหารสัตว์	25.43	284.77
	การอนุญาตให้สิทธิการใช้เชื้อแบคทีเรีย และการถ่ายทอดเทคโนโลยีการ ผลิตต้นเชื้ออาหารหมักสัตว์	138.76	843.79
	สารทดแทนไขมันต่อการย่อยของอาหารสัตว์และการดูดซึมกลูโคส	4.23	4.23
	รวม	168.51	1292.13

Economic Impact

Social Impact

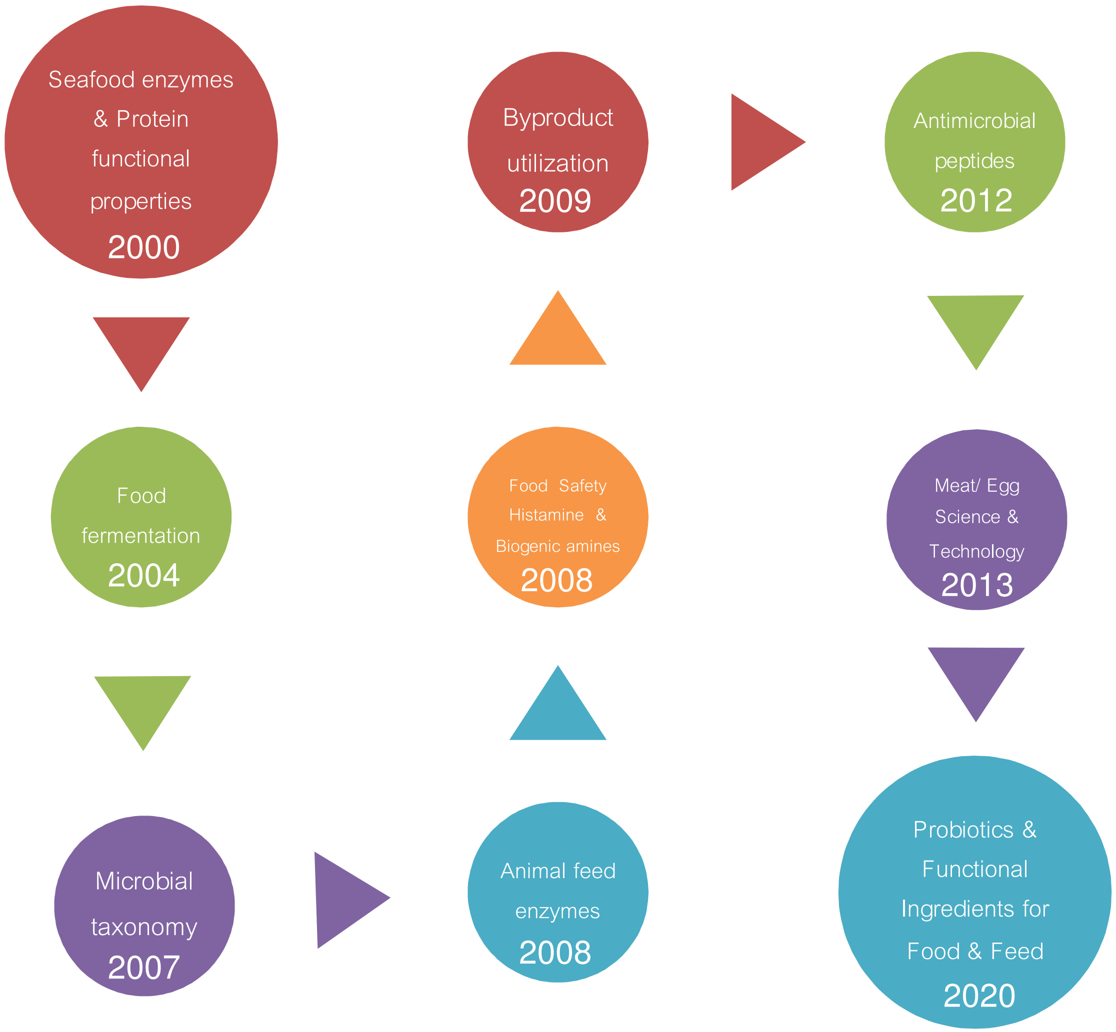
Environmental Impact

Recipe of success

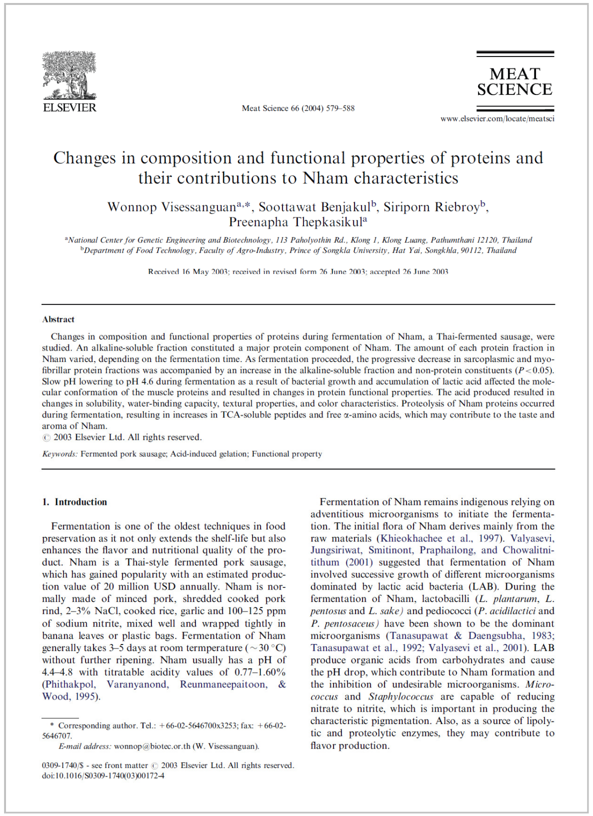
BIOTEC
a member of NSTDA

- Technological capability and readiness
- Mindset & Responsibility
- Strategic thinking
- Trust
- Networking
- Timing
  (*Speed ** quality and ***Ability to Deliver)
- Effective communication
- Teamwork

Excellence & Relevance & Visibility & Impact



2004


ELSEVIER

Meat Science 66 (2004) 579–588

MEAT SCIENCE

www.elsevier.com/locate/meatsci

Changes in composition and functional properties of proteins and their contributions to Nham characteristics

Wonnop Visessanguan[a,*], Soottawat Benjakul[b], Siriporn Riebroy[b], Preenapha Thepkasikul[a]

[a]National Center for Genetic Engineering and Biotechnology, 113 Paholyothin Rd., Klong 1, Klong Luang, Pathumthani 12120, Thailand
[b]Department of Food Technology, Faculty of Agro-Industry, Prince of Songkla University, Hat Yai, Songkhla, 90112, Thailand

Received 16 May 2003; received in revised form 26 June 2003; accepted 26 June 2003

Abstract

Changes in composition and functional properties of proteins during fermentation of Nham, a Thai-fermented sausage, were studied. An alkaline-soluble fraction constituted a major protein component of Nham. The amount of each protein fraction in Nham varied, depending on the fermentation time. As fermentation proceeded, the progressive decrease in sarcoplasmic and myofibrillar protein fractions was accompanied by an increase in the alkaline-soluble fraction and non-protein constituents ($P<0.05$). Slow pH lowering to pH 4.6 during fermentation as a result of bacterial growth and accumulation of lactic acid affected the molecular conformation of the muscle proteins and resulted in changes in protein functional properties. The acid produced resulted in changes in solubility, water-binding capacity, textural properties, and color characteristics. Proteolysis of Nham proteins occurred during fermentation, resulting in increases in TCA-soluble peptides and free α-amino acids, which may contribute to the taste and aroma of Nham.

Keywords: Fermented pork sausage; Acid-induced gelation; Functional property

1. Introduction

Fermentation is one of the oldest techniques in food preservation as it not only extends the shelf-life but also enhances the flavor and nutritional quality of the product. Nham is a Thai-style fermented pork sausage, which has gained popularity with an estimated production value of 20 million USD annually. Nham is normally made of minced pork, shredded cooked pork rind, 2–3% NaCl, cooked rice, garlic and 100–125 ppm of sodium nitrite, mixed well and wrapped tightly in banana leaves or plastic bags. Fermentation of Nham generally takes 3–5 days at room termperature (~30 °C) without further ripening. Nham usually has a pH of 4.4–4.8 with titratable acidity values of 0.77–1.60% (Phithakpol, Varanyanond, Reunmaneepaitoon, & Wood, 1995).

Fermentation of Nham remains indigenous relying on adventitious microorganisms to initiate the fermentation. The initial flora of Nham derives mainly from the raw materials (Khieokhachee et al., 1997). Valyasevi, Jungsiriwat, Smitinont, Praphailong, and Chowalitnitithum (2001) suggested that fermentation of Nham involved successive growth of different microorganisms dominated by lactic acid bacteria (LAB). During the fermentation of Nham, lactobacilli (*L. plantarum*, *L. pentosus* and *L. sake)* and pediococci (*P. acidilactici* and *P. pentosaceus)* have been shown to be the dominant microorganisms (Tanasupawat & Daengsubha, 1983; Tanasupawat et al., 1992; Valyasevi et al., 2001). LAB produce organic acids from carbohydrates and cause the pH drop, which contribute to Nham formation and the inhibition of undesirable microorganisms. *Micrococcus* and *Staphylococcus* are capable of reducing nitrate to nitrite, which is important in producing the characteristic pigmentation. Also, as a source of lipolytic and proteolytic enzymes, they may contribute to flavor production.

* Corresponding author. Tel.: +66-02-5646700x3253; fax: +66-02-5646707.
E-mail address: wonnop@biotec.or.th (W. Visessanguan).

0309-1740/$ - see front matter © 2003 Elsevier Ltd. All rights reserved.
doi:10.1016/S0309-1740(03)00172-4

2008


ELSEVIER

Available online at www.sciencedirect.com
ScienceDirect

Animal Feed Science and Technology
140 (2008) 125–138

ANIMAL FEED SCIENCE AND TECHNOLOGY

www.elsevier.com/locate/anifeedsci

Influence of crude xylanase from *Aspergillus niger* FAS128 on the *in vitro* digestibility and production performance of piglets

W. Tapingkae[a], M. Yachai[a], W. Visessanguan[a,*], P. Pongtanya[a], P. Pongpiachan[b]

[a] BIOTEC, Central Research Unit, National Center for Genetic Engineering and Biotechnology, 113 Paholyothin Road, Klong 1, Klong Laung, Pathumthani 12120, Thailand
[b] Department of Animal Science, Faculty of Agriculture, Chiang Mai University, Chiang Mai 50200, Thailand

Received 1 July 2004; received in revised form 19 January 2007; accepted 1 February 2007

Abstract

The influence of crude xylanase produced from *Aspergillus niger* FAS128 or FAS128 on the *in vitro* digestibility of pig diets and production performance of piglets was investigated in comparison with two commercial crude enzyme products, IE1 and IE2. The addition of FAS128 in all pig diets resulted in higher *in vitro* digestibility of dry matter (DM), crude fibre (CF), ether extract (EE), and ash than those supplemented with IE1 and IE2 ($P<0.05$). In 6-week feeding trials, weaned piglets fed with diets supplemented with FAS128 had a significantly higher average daily gain (ADG) and lower feed conversion ratio (FCR) than those given diets with IE1 and IE2 ($P<0.05$). The incidence of diarrhoea and concentration of blood urea nitrogen (BUN) of piglets at all growth period was also lowered. Based on the improved *in vitro* digestibility and production performance, crude xylanase produced from *A. niger* FAS128 has the potential for use as feed enzyme supplement.

Keywords: Xylanase; *Aspergillus niger*; Digestibility; Production performance; Pig

* Corresponding author. Tel.: +66 25646700x3253; fax: +66 25646707.
E-mail address: wonnop@biotec.or.th (W. Visessanguan).

0377-8401/$ – see front matter © 2007 Elsevier B.V. All rights reserved.
doi:10.1016/j.anifeedsci.2007.02.001

2010


Enzyme and Microbial Technology 46 (2010) 92–99

ELSEVIER

Contents lists available at ScienceDirect

Enzyme and Microbial Technology

journal homepage: www.elsevier.com/locate/emt

EMT

Degradation of histamine by extremely halophilic archaea isolated from high salt-fermented fishery products

Wanaporn Tapingkae[a], Somboon Tanasupawat[b], Kirk L. Parkin[c], Soottawat Benjakul[a], Wonnop Visessanguan[d,*]

[a] Department of Food Technology, Faculty of Agro-Industry, Prince of Songkla University, Hat Yai, Songkhla 90112, Thailand
[b] Department of Microbiology Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok 10330, Thailand
[c] Department of Food Science, University of Wisconsin, Madison, WI 53706, USA
[d] National Center for Genetic Engineering and Biotechnology (BIOTEC)-Central Research Unit, 113 Thailand Science Park, Paholyothin Rd., Klong 1, Klong Luang, Pathumthani 12120, Thailand

ARTICLE INFO

Article history:
Received 6 May 2009
Received in revised form 27 October 2009
Accepted 27 October 2009

Keywords:
Histamine
Degradation
Halophilic archaea
Histamine Dehydrogenase
Fermented foods

ABSTRACT

The presence of high level of histamine is detrimental to the quality and safety of fish sauce. Therefore, this study aimed to study the ability of extremely halophilic archaea to reduce histamine under high salt condition and to examine the enzyme activity potentially involved. Of 156 extremely halophilic archaea isolated from various salt-fermented fishery products, HDS3-1 from an anchovy fish sauce sample fermented for 3 months, exhibited the highest histamine degradation activity when cultured in halophilic medium containing 5 mM histamine (free-base), followed by HDS1-1, HPC1-2, and HIS40-3, respectively. HDS3-1 was classified as *Natrinema gari* based on 16S rRNA gene sequence similarities and did not exhibit decarboxylase activity toward all tested amino acids. Based on *in vitro* cytotoxicity assay, the treatment with whole cell extract of HDS3-1 to all cell lines tested resulted in dose-dependent inhibitions of the cell growth with the IC_{50} values higher than 250 $\mu g\,ml^{-1}$. Histamine-degrading activity of HDS3-1 was located in the intracellular fraction and required 1-methoxy-5-methylphenazinium methylsulfate (PMS) as an electron carrier. The optimal pH, salt concentration, and temperature for histamine degradation were pH 6.5–8, 3.5–5 M NaCl, and 40–55 °C, respectively. The activity was fully retained at pH 6.5–9, in the presence of NaCl above 2.5 M, and at temperature lower than 50 °C. The results suggested that histamine-degrading activity of HDS3-1 was most likely associated with salt-tolerant and thermo-neutrophilic histamine dehydrogenase.

1. Introduction

The presence of high levels of histamine is detrimental to the quality and safety of foods, particularly fish sauce and other fermented fishery products from scombroid species. Histamine in foods is mainly induced by histamine decarboxylase activity from several kinds of bacteria. The presence of histamine in fermented foods does not usually represent any health hazard to individuals unless large amounts are ingested. Typical symptoms may be observed in certain individuals, and include nausea, sweating, headache, and hyper- or hypotension [1]. The Food and Drug Administration (FDA) established an advisory level of 500 ppm to be toxic to human health [2]. Histamine is heat stable and is not detectable through organoleptic analysis by even trained panelists. Except for the gamma irradiation, no other food processing methods are available for histamine degradation [3]. Therefore histamine, if present, is difficult to destroy and posts a risk of food intoxication.

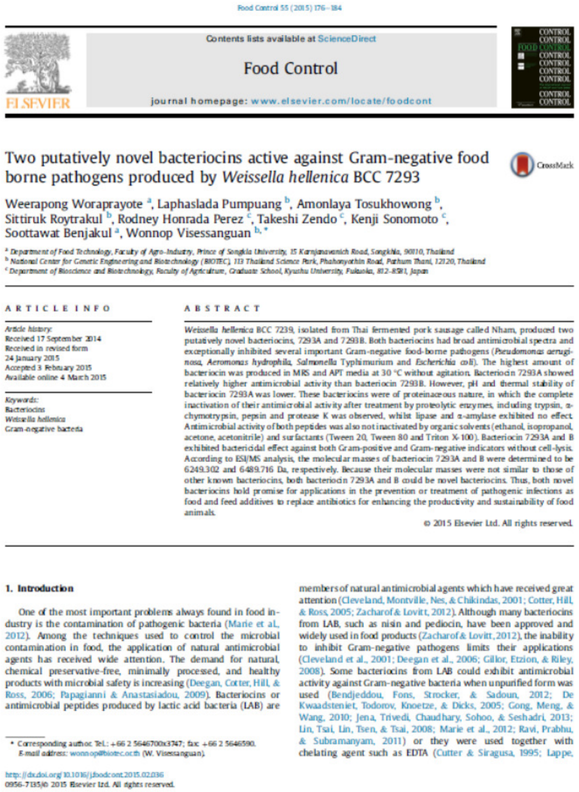
The presence of histamine-degrading enzymes either histamine oxidases or histamine dehydrogenases has been reported in various higher organisms [4–6] as well as in microorganisms [7–10]. Therefore, the application of starter strains possessing histamine-degrading activity might be a way for decreasing the amount of histamine produced *in situ* [5,7]. Nevertheless, the applications of these microorganisms and enzymes have been restricted by unfavorable physiological conditions for growth and enzyme activity such as low oxygen concentration, low pH value, undesirable temperature, and especially in the high salinity. The extremely halophilic archaea, in particular, are well adapted to saturated NaCl concentrations (grow optimally above 3.4–5.1 $mol\,l^{-1}$ or 20–30% NaCl). They have a number of novel molecular characteristics, especially for their enzymes that function in high salt concentration (3–4 M NaCl), such as lipase [11], protease [12], and glucose dehydrogenase [13]. Therefore, in this present study, extremely

* Corresponding author. Tel.: +66 2 5646700x3747; fax: +66 2 5646590.
E-mail address: wonnop@biotec.or.th (W. Visessanguan).

0141-0229/$ – see front matter © 2009 Elsevier Inc. All rights reserved.
doi:10.1016/j.enzmictec.2009.10.011

BIOTEC
a member of NSTDA

2015


Food Control 55 (2015) 176–184

Contents lists available at ScienceDirect

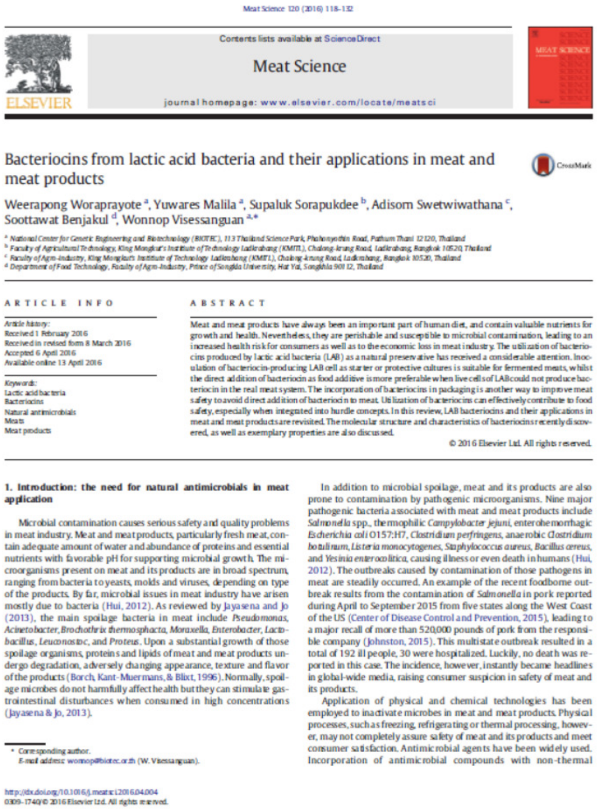
Food Control

journal homepage: www.elsevier.com/locate/foodcont

Two putatively novel bacteriocins active against Gram-negative food borne pathogens produced by *Weissella hellenica* BCC 7293

Weerapong Woraprayote [a], Laphaslada Pumpuang [b], Amonlaya Tosukhowong [b], Sittiruk Roytrakul [b], Rodney Honrada Perez [c], Takeshi Zendo [c], Kenji Sonomoto [c], Soottawat Benjakul [a], Wonnop Visessanguan [b,*]

2016


Meat Science 120 (2016) 118–132

Contents lists available at ScienceDirect

Meat Science

journal homepage: www.elsevier.com/locate/meatsci

Bacteriocins from lactic acid bacteria and their applications in meat and meat products

Weerapong Woraprayote [a], Yuwares Malila [a], Supaluk Sorapukdee [b], Adisorn Swetwiwathana [c], Soottawat Benjakul [d], Wonnop Visessanguan [a,*]

2016

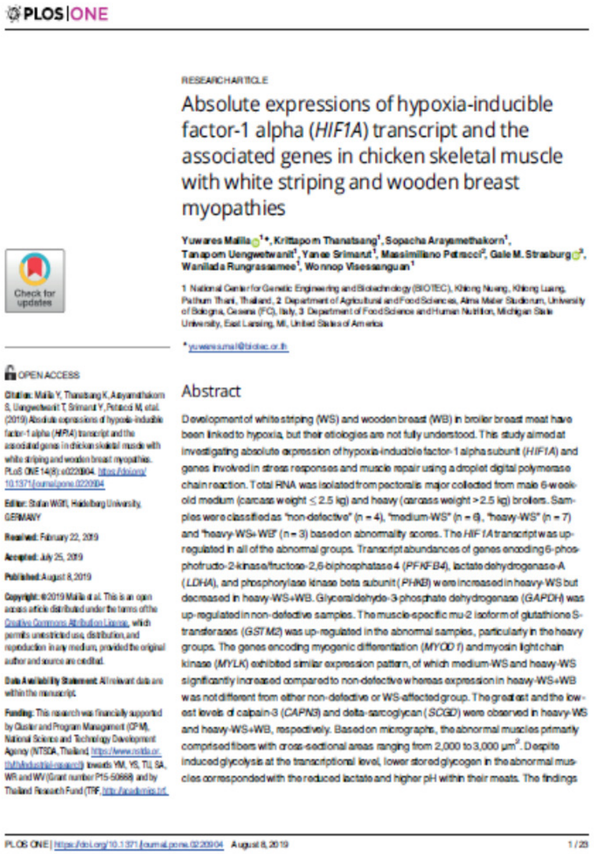

Differences in textural properties of cooked caponized and broiler chicken breast meat

J. U-chupaj, Y. Malila, C. Gamonpilas, K. Kijroongrojana, M. Petracci, S. Benjakul, and W. Visessanguan

2017 Poultry Science 96:2491–2500

BIOTEC
a member of NSTDA

2018


PLOS | ONE

RESEARCH ARTICLE

Absolute expressions of hypoxia-inducible factor-1 alpha (*HIF1A*) transcript and the associated genes in chicken skeletal muscle with white striping and wooden breast myopathies

Yuwares Malila[1]*, Krittaporn Thanatsang[1], Sopacha Arayamethakorn[1], Tanaporn Uengwetwanit[1], Yanee Srimarut[1], Massimiliano Petracci[2], Gale M. Strasburg[3], Wanilada Rungrassamee[1], Wonnop Visessanguan[1]

OPEN ACCESS

Abstract

Development of white striping (WS) and wooden breast (WB) in broiler breast meat have been linked to hypoxia, but their etiologies are not fully understood. This study aimed at

2019


Fish and Shellfish Immunology 86 (2019) 4–13

Contents lists available at ScienceDirect

Fish and Shellfish Immunology

journal homepage: www.elsevier.com/locate/fsi

Full length article

Effects of *Bacillus aryabhattai* TBRC8450 on vibriosis resistance and immune enhancement in Pacific white shrimp, *Litopenaeus vannamei*

Surapun Tepaamorndech[a,*], Kanittha Chantarasakha[a], Yutthana Kingcha[a], Sage Chaiyapechara[b], Metavee Phromson[c], Malinee Sriariyanun[d], Catherine P. Kirschke[e], Liping Huang[e], Wonnop Visessanguan[a]

ARTICLE INFO

ABSTRACT

The use of probiotics in aquaculture is a practical alternative to promote animal health and disease prevention.

2020


Aquaculture 521 (2020) 735025

Contents lists available at ScienceDirect

Aquaculture

journal homepage: www.elsevier.com/locate/aquaculture

Suppression of white feces syndrome in Pacific white shrimp, *Litopenaeus vannamei*, using hen egg white lysozyme

Weerapong Woraprayote[a], Laphaslada Pumpuang[a], Surapun Tepaamorndech[a], Kallaya Sritunyalucksana[b], Metavee Phromson[b], Waraporn Jangsutthivorawat[b], Saharuetai Jeamsripong[c], Wonnop Visessanguan[a,*]

ARTICLE INFO

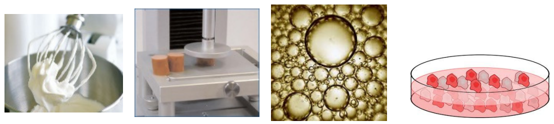
ABSTRACT

Core capability & Technology platform: Protein & Peptide Technology

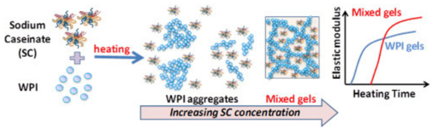
Industrial interest | **Core capability** | **Collaboration & network**

Industrial interest

Protein/Peptide Functionality

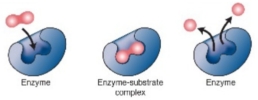


Food Matrix Interaction



Alternative Protein Sources

Enzyme-aided food processing



Core capability

Physical & Protein Functionality Analysis

- Texture analysis
- Viscosity
- Solubility
- Food structure
- Gelling, foaming & emulsifying properties

Chemical Analysis

- Total protein
- Amino acid profile
- Enzyme activity
- Degree of hydrolysis
- Peptide analysis
- Enzymatic screening

Bioaccesibility & Bioavailability & Biological Activity

- Dynamic *in vitro* gastrointestinal model (TinyTIM®)
- Cell-based Assay

Food Processing & Protein Purification

- Protein purification
- Protein modification
- Thermal process

Collaboration & network

OVF, DMF Thailand, Tantawan, yamamori, SUNFOOD, AST•ASAH, Squid Brand, BETAGRO, MTEC (a member of NSTDA), BIOTEC (a member of NSTDA)

Core Capability & Technology Platform: Starter Technology

Industrial interest | **Core capability** | **Collaboration & network**

Fermented Foods and seasoning

- Process control & reliability
- Consistent quality
- Safety
- Value-added products

Fermented Feed

- Shelf-life extension
- high-quality feed

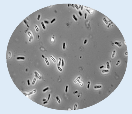
Screening technology of potential microbes

Lactic acid bacteria

L. plantarum

Acetic acid bacteria

Bacillus



Bacillus spp.

Culture optimization

Scale up

เอแอนด์พี ออร์ชาร์ด (A&P Orchard)

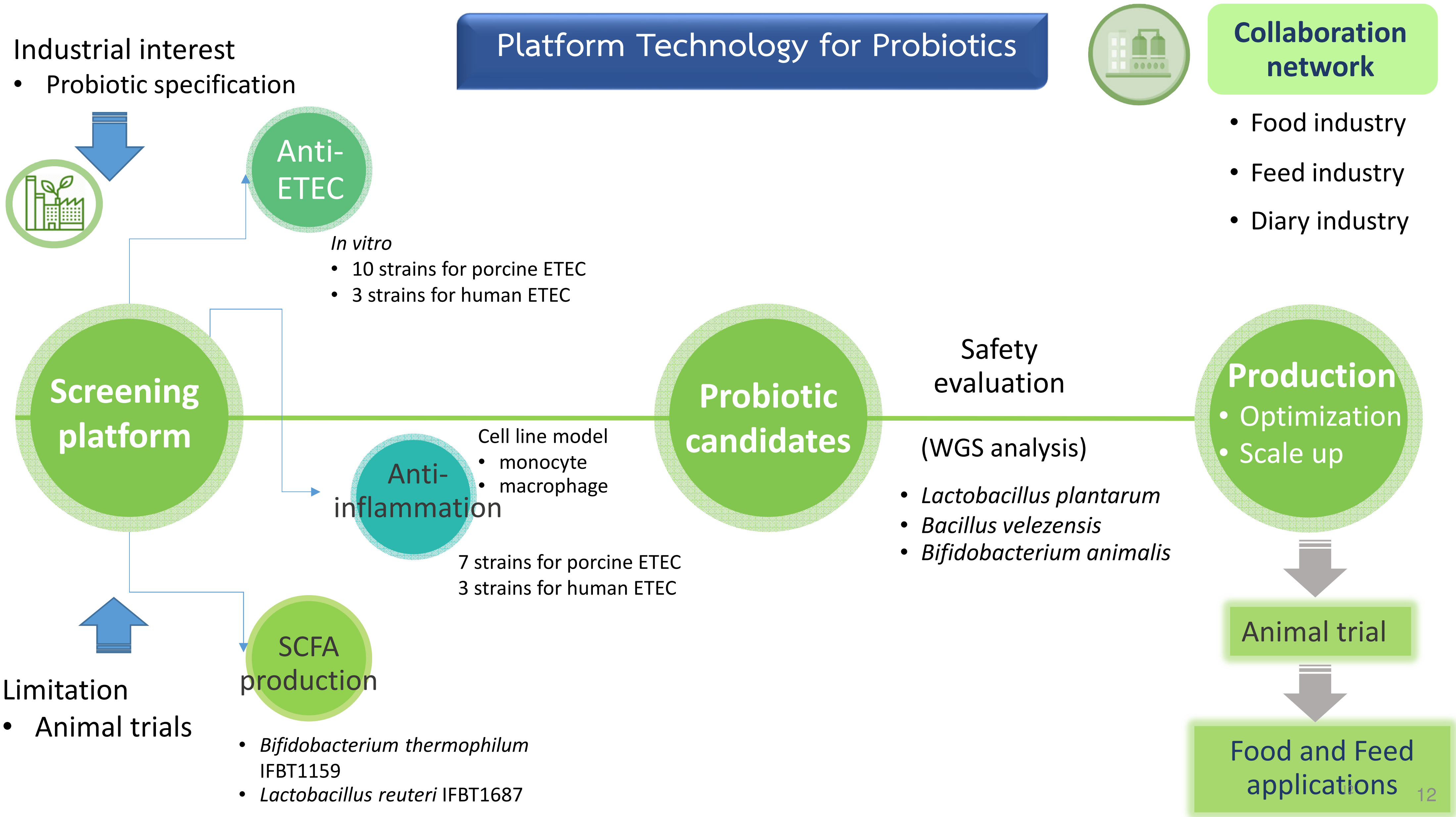
Micro INNOVATE

PIGEON BRAND

สหกรณ์โคนม

BIOTEC
a member of NSTDA

กรมปศุสัตว์

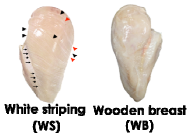


Platform Technology for Probiotics
Industrial interest
• Probiotic specification
Collaboration network
• Food industry
• Feed industry
• Diary industry
Anti-ETEC
In vitro
• 10 strains for porcine ETEC
• 3 strains for human ETEC
Screening platform
Anti-inflammation
Cell line model
• monocyte
• macrophage
7 strains for porcine ETEC
3 strains for human ETEC
Probiotic candidates
Safety evaluation
(WGS analysis)
• Lactobacillus plantarum
• Bacillus velezensis
• Bifidobacterium animalis
Production
• Optimization
• Scale up
Animal trial
Food and Feed applications
SCFA production
• Bifidobacterium thermophilum IFBT1159
• Lactobacillus reuteri IFBT1687
Limitation
• Animal trials

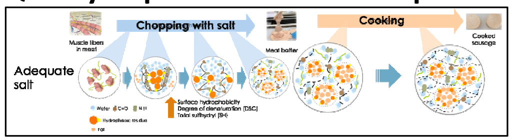
Core capability & Technology platform: Meat Science & Food Innovation

Industrial interest

Meat Defects: White striping (WS) & wooden breast (WB) myopathies



Quality improvement of meat products



Value-added food products

Plant-based meat/Foods for special needs

Core capability

Gene Expression Analysis

- Real-time PCR and digital droplet PCR techniques
- Gene expression analysis in muscle tissue

Physicochemical Analysis

- Meat texture and color analysis
- Chemical & biochemical analysis in muscle meat
- Muscle structure and composition
- Muscle & meat quality
- Meat defect characterization

Meat Product Processing and Formulation

- Conversion of muscle to meat
- Meat product processing (ea. tumbling, emulsifying, and retorting)
- Meat-food ingredient interactions (ea. salt and fat reduction)

Collaboration & Network

MTEC a member of NSTDA

Prince of Songkla University

จุฬาลงกรณ์มหาวิทยาลัย Chulalongkorn University

THAMMASAT UNIVERSITY

UNIVERSITY of GUELPH

ALMA MATER STUDIORUM A.D. 1088

Mindset and Strategy

- Researcher … Solution Provider
- Laboratory scale … Commercial scale
- Customer … Team and Strategic Partner

1 Pentosanase production from a local microorganism

Economic and Social Impact in 2007-2018 = 635 million baht

- Profit to licensee
- Import substitution
- Investment
- Benefit to farm operators (better meat yield and healthier animals)

2 Starter culture and fermentation process for producing animal feed

Economic and Social Impact in 2010 - 2018 = 734 million baht

- Profit to licensee
- Import substitution
- Investment
- Benefit to farm operators (better meat yield and healthier animals)

3 Acceleration of fish sauce fermentation with enzymes

Economic and Social Impact in 2012 and 2014 = 67 million baht

- Profit to licensee
- Reduction from 18 months to 11 months
- The company produced new product in April 2009

Pentosanase production from a local microorganism

BIOTEC
a member of NSTDA

1

The technology, which includes the pentosanase-producing microorganism, *Aspergillus* sp., carefully screened from BIOTEC Culture Collection and the production process to achieve product in a powder form, was licensed to Asia Star Animal Health Co., Ltd. (ASAH) to manufacture and distribute pentosanase as feed additives.

Multi-enzyme preparation for swine and poultry

- Containing multi-enzyme activities such as amylase, cellulases, hemicellulases and acid protease that aids the nutrient utilisation in animal
- Improve energy utilization and protein digestibility in animal
- Increased average daily gain (ADG)
- Efficient nutrient utilization/ less pollution/ reduced production cost

Economic and Social Impact in 2007-2018 = 635 million baht

- Profit to licensee
- Import substitution
- Investment
- Benefit to farm operators (better meat yield and healthier animals)

Starter culture and fermentation process for producing animal feed

BIOTEC
a member of NSTDA

2

DS-1 Feed Additive (*Bacillus* cells and enzymes)
Commencing in 2006, BIOTEC has collaborated with SPM Feed Co. Ltd. on a project to develop the fermentation process for *Bacillus* spp. and subsequently licensed this technology to Micro Innovate to produce Bacillus-fermented product, called DS-1 as a feed additive used in the SPM Group's pig farms. The use of DS-1 has increased the profit of the company, saving them from importing feed additives.

Economic and Social Impact in
2010 - 2018 = 734 million baht

- Profit to licensee
- Import substitution
- Investment
- Benefit to farm operators (better meat yield and healthier animals)

Acceleration of fish sauce fermentation with enzymes

Research

BIOTEC has collaborated with **Thai Fish sauce Factory (Squid Brand) Co., Ltd** on a project to develop the fermentation process.

To reduce from 18 months to 11 months.

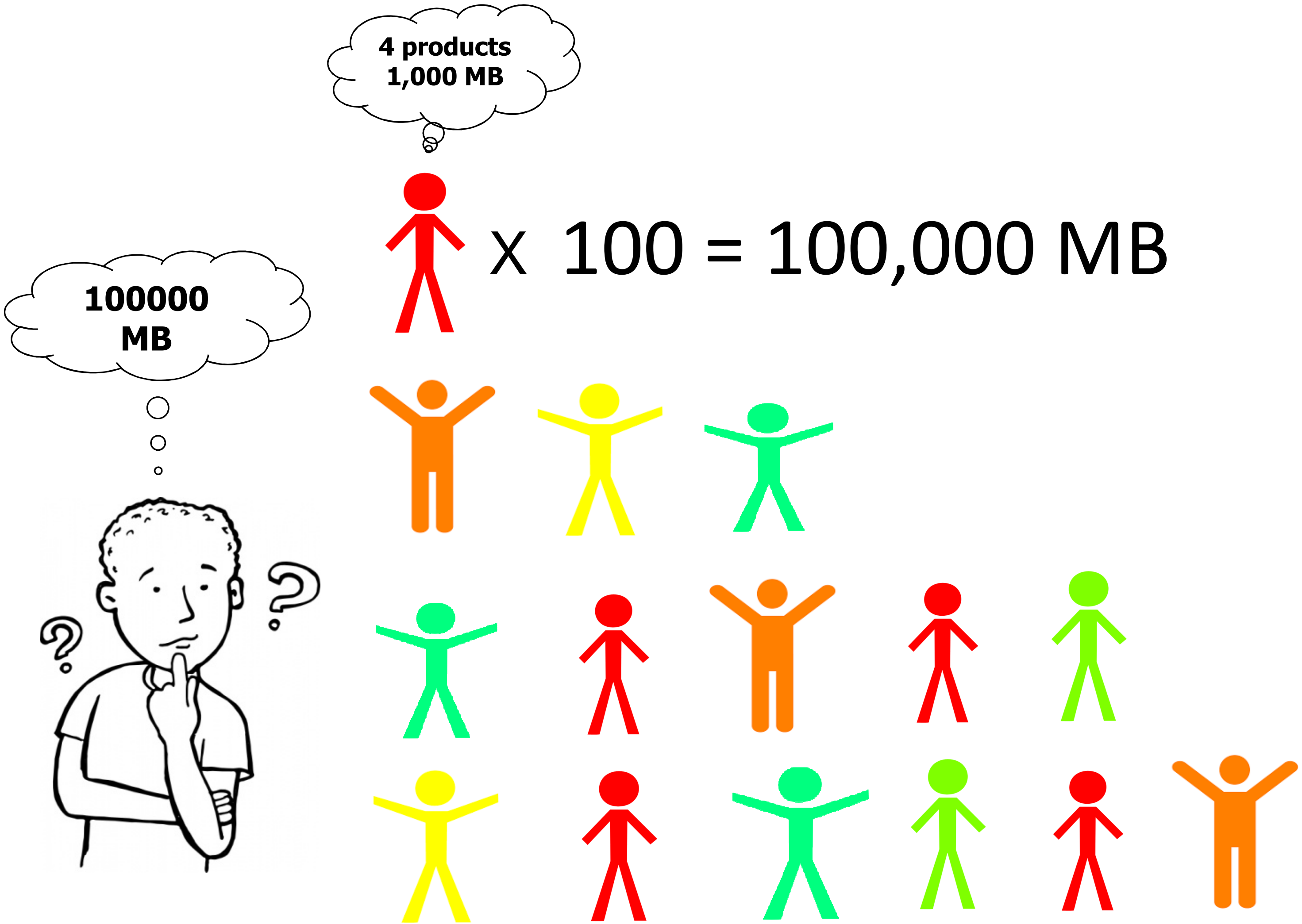
Technology transfer

The company produced new product in April 2009

3

Economic and Social Impact in 2012 and 2014 = 67 million baht

- Profit to licensee
- Reduction from 18 months to 11 months
- The company produced new product in April 2009



BIOTEC
a member of NSTDA

Acknowledgements


รศ.ดร.จริยา บุญญวัฒน์


Haejung An


รศ.ดร.ศักรินทร์ ภูมิรัตน


ศ.ดร.มรกต ตันติเจริญ


ดร.รุจ วัลยะเสวี


ดร.กัญญวิมว์ กีรติกร


ศ.ดร.สมบูรณ์ ธนาศุภวัฒน์

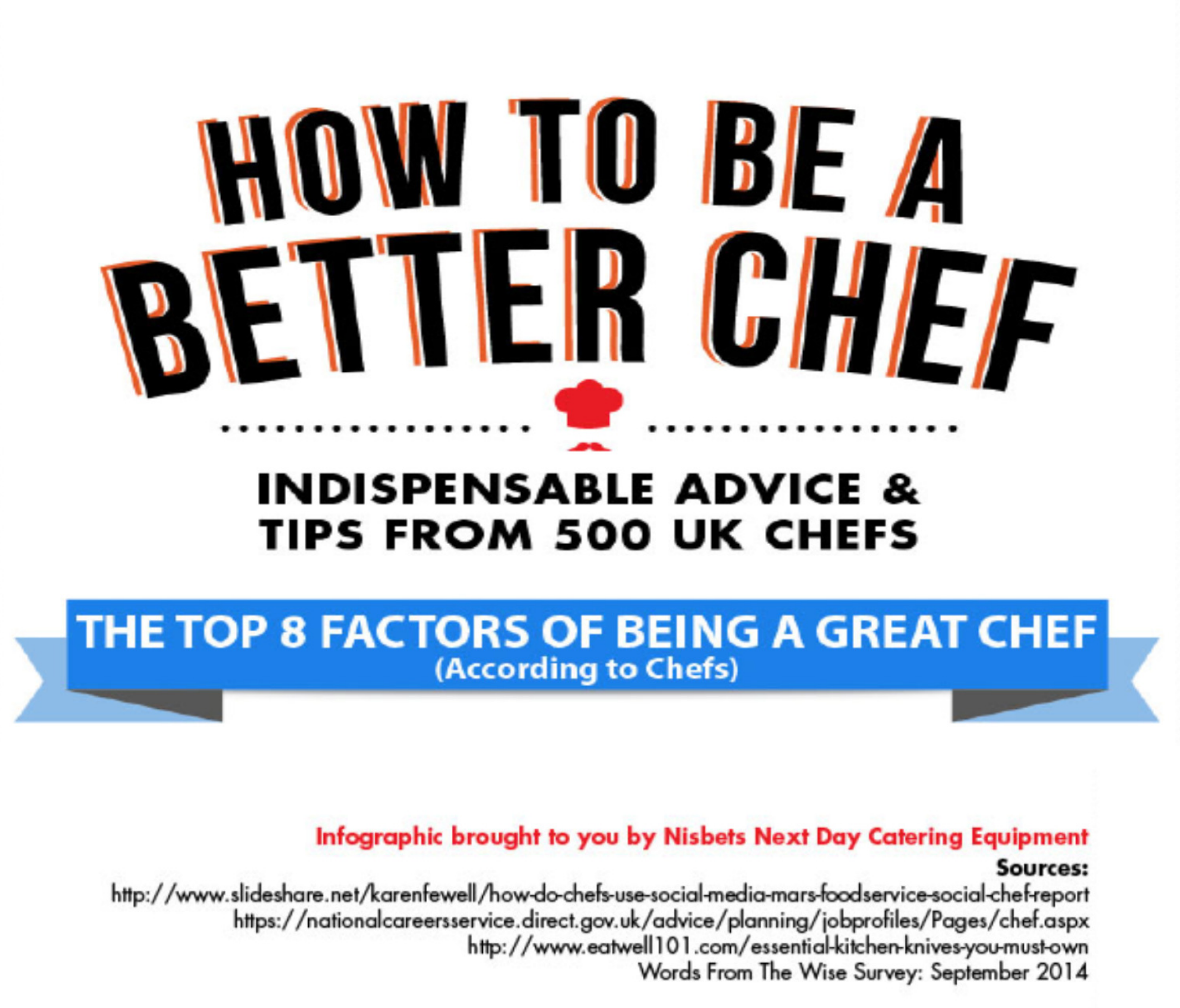

ศ.ดร.สุทธวัฒน์ เบญจกุล

Team + Students+ Collaborators + Funding Sources

Thank you

A Driving Force for National
Science and Technology Capability

Wonnop Visessanguan
National Center for Genetic Engineering and Biotechnology (BIOTEC)
National Science and Technology Development Agency (NSTDA)
113 Thailand Science Park, Phahonyothin Road
Khlong Nueng, Khlong Luang
Pathum Thani 12120
Thailand
Phone: + 66-2564-6700 (ext. 8030), Fax: +66-2564-6707
E-mail: wonnop@biotec.or.th


HOW TO BE A
BETTER CHEF
INDISPENSABLE ADVICE &
TIPS FROM 500 UK CHEFS
THE TOP 8 FACTORS OF BEING A GREAT CHEF
(According to Chefs)
Infographic brought to you by Nisbets Next Day Catering Equipment
Sources:
http://www.slideshare.net/karenfewell/how-do-chefs-use-social-media-mars-foodservice-social-chef-report
https://nationalcareersservice.direct.gov.uk/advice/planning/jobprofiles/Pages/chef.aspx
http://www.eatwell101.com/essential-kitchen-knives-you-must-own
Words From The Wise Survey: September 2014

1. Learning

NO MATTER YOUR LEVEL OF EXPERIENCE, THERE'S ALWAYS MORE TO LEARN

" Remember you never stop learning as a chef, there is always someone with a new technique, a new flavour, a new product, what an exciting industry to come into. "

SARAH FAWCETT

" This is when the real training takes place. Watch, learn and be inspired. "

JOE JOHNSON

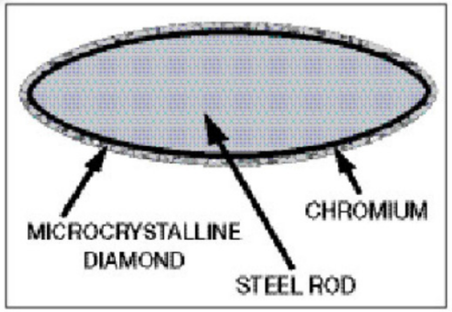
2. Equipment & Knives

A DULL KNIFE IS DISRESPECTFUL TO INGREDIENTS

" Get a decent set of knives that are comfortable for you and they will last a career. "

Robert White

HONING & KNIFE SHARPENING YOUR KNIVES



BIOTEC
a member of NSTDA

3. Food & recipes

{ ALWAYS TRUST YOUR TASTE BUDS }

“Taste everything. Repeatedly. Taste ingredients. Taste how they combine. Understand how flavours combine.”
JENNY LONG

“Think with your Tastebuds”
VIV ALLMAN-NEAL

4. Motivation

PASSION REQUIRED!

“No matter what the day throws at you, remember why you're doing this! You love cooking!”
RYAN VAN-GELDER

“Be your best, push yourself to your limits, you can only aim higher!”
RICHARD TYLER

“Never give up!”
JAZMYN STANDEN

5. Dealing with Stress

" Breathe, relax have fun and enjoy what you do as it shows in the food you present to your guests and they will relax and enjoy their experience as well. "
GARY HORNER

" Stay calm. If you get flustered that's when mistakes can happen. "
LISA AUGER

6. Safety

" Watch your fingers! "
MARC CHIVERS

" Take care of your fingers, you need them. "
PATRICIA LESLIE

" Mind your fingers! "
KRISTY BROWN

" A sharp knife is a safe knife "
PHIL DARLING

BIOTEC
a member of NSTDA

7. Chef Life

" Work Hard, Play Hard "
HAZEL MARKLAND

" Don't cut corners - your reputation is your most important asset "
DEBBIE MULLOY

" On your way up, be nice to everyone, earn their respect and give respect. Remember, you are only as good as your crew "
SUSAN GRAY

8. Prep

" Prepare, prepare, prepare! "
ROBERT DITTRICH

" Preparation is key "
TRACEY BELCHER

KEEP YOUR HEAD DOWN, YOUR KNIVES SHARP AND MOST IMPORTANTLY OF ALL! KEEP COOKING!

Mathew Dines