



# 2001 IFT Annual Meeting Food Expo

. . \*

---

. \*

2001 6 23 27 Louisiana  
 New Orleans Ernest N. Morial Convention  
 Center 61 (Institute of  
 Food Technologists) 가  
 . New Orleans meeting  
 (54 ), (9 ), session(3 ),  
 Hot topic session(3 ) , IFT  
 technical program 36 session  
 technical oral presentation 6 session 36  
 technical poster presentation 106 session  
 . Food chemistry, Engineering,  
 Microbiology, Nutrition  
 , Biotechnology,  
 Carbohydrate, Dairy, Food safety, Fruits &  
 Vegetables, Marketing & Management, Nonthermal  
 Processing, Nutraceuticals, Packaging Seafood  
 . IFT hot  
 topic session

가 가 , 가  
 Food Ingredients/Additives 가 111 ,  
 Laboratory/Pilot Plant Equipment, Instrumentation  
 and Supplies 가 42 , Processing/Packaging  
 Equipment, Instrumentation and Supplies 가 109  
 .  
 Nutraceuticals/Functional food, Starch/Food  
 hydrocolloids, Nonthermal/Thermal processing  
 Food packaging .

## 1. Nutraceutical

가  
 (Dietary supplement)

1994 (DSHEA) . FDA

“ 가 , 1) , 2) , 3) , 4) 가 Kraft Food Finley (BT) , 5) 6) ”

1) resveratrol 가 가 , 2) (FDA) 가

30 가 FDA 2001 IFT 가 가 , Nutraceuticals

6 session 36 가 , 9 가 HPLC Mass Spectrometry(MS) Evaporative Light Scattering Detection(ELSD) , 28 session 가

IMAGINutrition Almada

(1) Nutraceuticals and functional foods: From concepts and regulations to final products (product-specific research validation)

Nutraceutical

(American Herbal Products Assn.) Betz GRAS “ ” 가 가

. 1999 11 1 Frank Pallone “Nutraceutical Research and Education Act(NREA)

(2) Analysis of nutraceuticals and phytochemicals

Klump (Ralston Analytical Lab.) 80% / 65 NaOH HPLC-UV 260nm . Ohio Schwartz Carotenoid cis-trans

C18 C30 carotenoid

(fentamolar ) . Carotenoid trans cis , 가 cis carotenoid

anthocyanins Oregon Wrolstad nutraceuticals

anthocyanins cryogenic , HPLC-UV diode array 가

electrospray mass spectroscopy(ESMS) NMR Wathelet(Faculte Universitaire des Sciences

Agronomiques de Gembloux, Belgium) glucosinolates

glucosinolates glucose release , palladium , X-ray , GLC, HPLC , desulfated glucosinolates HPLC (ISO 9167-1) / (70/30) glucosinolates

Helix pomatia sulfatase desulfation DEAE A-25 Inertsil 3 ODS-3 (100 3mm, 3µm) / (35 2% 25% 가 ) HPLC ISO ISO meeting ring test가

(3) How processing can optimize the phytonutrient benefits of fruit and vegetables

carotenoid, flavonoid, vitamin, phenolics phytonutrient

. Arkansas

가 Talcott

가

(4) Traditional Asian Functional food products and markets

가

가 가 /  
가

20

가

가

가 /

2. hydrocolloid

(1)

Kawamura

74.5 (WHO )

phytochemicals

phytonutrients

가

가 가

IFT meeting

(RS)

session

1980

"nutrients" "nonnutritive  
health factors"

가

"dietary supplements",

Hans Englyst

"health foods", "functional foods",  
"nutraceuticals"

(human feeding)

, 가

"natural" product

(SCFA)

RS

FDA

가

National Center for Toxicology Research

butylate가 *in vitro*

C.Y.W. Ang

butylate

RS가

turnover가 가

*in vitro*

, SCFA

가

가

ginseng,

cell turnover

가

ginkgo, Siberian ginseng ma huang

(hyperproliferation)

RS

, RS

inulin

starch based pudding

RS

가

가

Luisiana

가

X. Liang

(palmitic, oleic, linoleic,

, cereal

가

monopalmitin, tripalmitin, lysophosphatidylcholin

oat

가

lysophosphatidylethandamine) 가

Oat

gels

가

peak

가

가

viscosity, minimum viscosity, final viscosity

cereal

가

가 monopalmitin

가

가

setback breakdown

Starch

cellulose

가

swelling

amylose

capacity pasting stability

amylopectin

starch powdered food starches, modified

starches, pre-gelatinized instant

가

starches granular cold water swelling

(CWS) starches FDA 21 CFR

172-892 starch labeling

(2) hydrocolloids

starch

hydrocolloids

가

가

가

가

가

gelation,

Inulin

lipid

가

starch

stabilization, thickening

가

Purdue

synergies

J. R. Daniel

starch

가

inulin

가

hydrocolloids

starch

4%

. Kansas

starch gel 0.1 I:S (Inulin : Starch)

E. I. Yaseen

iota carrageenan

inulin 가

gum arabic

가

carrageenan gum pH

Inulin 가

starch 가

starch 가 6%

가 inulin

가

gel

8%

gel

carrageenan

gum

. Inulin

arabic iota carrageenan

가

gel

가

inulin starch

Alginates 가

hydrocolloids  
 가 가  
 .  
 가 . propylene glycol alginate (PGA)  
 alginate  
 가  
 alginate sugar acids, guluronic  
 acid(G) mannuronic acid (M)  
 natural carbohydrate polymer . M G  
 alginate  
 alginate ,  
 calcium alginate  
 chain 가 alginate gel  
 . alginate  
 dressing, sauses PGA가  
 , sodium alginate cheese  
 sauces, fruit fillings, instant flans, mousses,  
 icing glazes onion rings meats  
 .  
 polymer  
 xanthan gum , ,  
 pH, heat, high salt  
 . Xanthan gum  
 pseudoplastic  
 , pH가  
 dressing 가 . galactomannans  
 ( guar gum locust bean gum)  
 가 가  
 .  
 ice cream, pasteurized  
 cheese dips spreads .  
 .  
 Guar gum *Cyampsis tetragonolobus*  
 (Family Leguminosae)  
 .  
 galactomannan  
 (non-ionic nature)  
 . 가

. Guar gum  
 pseudoplastic (sheer-thining)  
 pH 3.5 , pH가 170F  
 가 . low, medium,  
 high viscosity types, coarse or fine mesh particle  
 size, agglomerated form, deodorized bland  
 .  
 80%가  
 가 .  
 Othee (FMC BioPolymer)  
 hydrocolloids  
 frozen bakery dough system  
 . 가 hydrocolloids guar gum,  
 xanthan gum, alginates, microcrystalline  
 cellulose(MCC), and Viscarin XP 3480  
 carrageenan . hydrocolloid  
 , performance  
 dough , -  
 cycle  
 가 .  
 hydrocolloids  
 . Fresh dough -30  
 -10 , 4  
 - 가  
 , 16  
 , 가 ,  
 가 . Viscarin  
 XP 3480 가 , , ( 가  
 . Viscarin XP 3480  
 , - ice  
 crystal  
 .  
 viability  
 가  
 3. 가 가  
 (1) 가



586, 655 MPa come-up-time PEF 가 PME  
 . 655 MPa  
 come-up-time 260 6 log 가 PEF yogurt-based  
 come-up-time product , ,  
 plain low fat  
 FDA V. M. Balasubramanian yogurt 87.6%, strawberry jelly 88%  
 , pH 3.6% strawberry syrup 가 PEF system  
 30kV/cm, 32 microseconds  
 60 65 30  
 4 22 4  
 pH PEF  
 가 , pH, Brix 가  
*Bacillus subtilis* ATCC 6633 pH PEF 가  
 가 827 MPa yogurt-based product ,  
 log holding time 0.1 10 ,  
 60 75 , pH 7.0 5.0 . Washington J. J.  
 가 가 Fernandez-Molina PEF  
 pH *B. subtilis*  
 가 . PEF 28, 32, 36 kV/cm  
 84 microseconds ,  
 2) Pulsed electric fields techniques sub-lethal 60 65 , 21  
 . PEF  
 Nonthermal processing pulsed  
 electric fields(PEF) 4 14  
 PEF PEF  
 가 Ohio 30  
 H. W. Yeom PEF PEF  
 pectin methyl esterase(PME)  
 가 .  
 35 kV/cm 184 microseconds  
 83.2±1.3% PME가 . PEF  
 61.9±0.3 가 3)  
 PME  
 24.1±4.3% . 25 kV/cm, 50  
 PEF PME가 90%  
 PEF  
 가 PME  
 PEF  
 PME  
*E. coli* O157:H7  
 1.8 kGy dose apple juice  
*E. coli* O157:H7 5 log



. 1.8 kGy , Brix, Tenness D. Guzey ultrasonic  
 , TBARS processing  
 dose 가 . 5wt%  
 가 4.5 kGy dose (Bovine serum albumin, whey protein, milk  
 TBARS 가 protein) 0.1 2 watt/cm<sup>2</sup> power  
 5 . 0 60 ultrasound  
 가 가 가 drop shape  
 TBARS processing temp. head analysis tensiometer . BSA  
 space . 2 watt/cm<sup>2</sup> 30 . 53 mN/m  
 가 40 mN/m 0.5 watt/cm<sup>2</sup>  
 TBARS 가 . sonication  
 가 flushing 가  
 TBARS . E. 가 sonication 가  
 coli O157:H7 5 log sonication power 가  
 apple juice 가  
 TBARS 가 가 BSA가 whey protein, milk  
 protein sonication  
 South Dakota P. Kaothied Ultrasound processing  
 가 Listeria monocytogenes  
 가 가 .  
 Listeria (2) 가  
 monocytogenes 가  
 가  
 가 가  
 0.2, 0.5 & 1.0 ppm, 1, 15, & 30 ,  
 10, 15, & 20 가  
 가 0.5 1.0 ppm, 1 15 ,  
 20 가 90% .  
 computer-aided design (CAD), computer-aided  
 Listeria monocytogenes manufacturing (CAM), microprocessor-based  
 control process automation  
 가 water  
 Ultrasonic processing immersion, water-spray processes,  
 emulsion , , , aseptic packaging .  
 Water immersion, rotary retorts water

immersion thermal processing systems	z-value 2.8	.
heating cooling 가 "end over end"		
가 . retort	4.	
pouches, plastic trays, plastic bottles, plastic cups	(1)	(package integrity)
(overpressure processing)		(package integrity)
overpressure processing water immersion 가 .		, modified atmosphere food
가		(leak)
		leak indicator
. steam air overpressure medium	leakage	in-line
cycle	가 .	visual leak
	indicator 가	
Water immersion water spray thermal processing systems .	tracer gas method .	
, 가		가 .
가 가 가	, 가 ,	
. steam water spray automated batch retort systems	(flexible package)	
(ABRS)	package integrity	
Florida V. Moody orange juice	가	pressure vacuum decay
<i>E. coli</i> thermal inactivation kinetics	method가 .	
orange juice		
pH가 가	oxygen-sensitive indicator	
가	가 label	
<i>Salmonella E. coli</i> O157:H7		solid-state
가 orange juice	optical instruments	
apple juice pH		0.01% 21%
가		
. Moody	100%	
<i>E. coli</i> O157:H7 가		off-line QC 가
pH thermal inactivation kinetics .		
52, 55, 58, 60	(2) Active and intelligent packaging	
D-value가 23 , 2.7 , 21 5		

(antimicrobial agent)  
 , bacteriocins ,  
 (essential oils),  
 , triclosan, silver zeolites  
 , 가 , chlorine dioxide .

“ active packaging ”  
 , 가  
 “ intelligent packaging ”  
 intelligent packaging  
 가

Active packaging  
 ,  
 , aroma, 가 가  
 가  
 intelligent packaging ,  
 (temperature switchable membrane)  
 . P. J. Slade (National Center for  
 Food Safety & Technology, Illinois Institute  
 of Technology) , 가  
 (responsive packaging)  
 , microwave, MAP , 가  
 O<sub>2</sub> scavenger, CO<sub>2</sub> scavenger/emitter,  
 ethylene absorbers MAP pads, pouches,  
 . Sealed Air Corp. L. K. Cook trays  
 FDA GRAS  
 가 가 가 fresh-R-Pax pads, pouches, trays

가  
 (antimicrobial agent)  
 가  
 (antimicrobial agent) . 가 ,  
 . (a) FDA , 가  
 , (b)  
 , (c) shelf life 가,  
 , (d) 가 , (e) plastic  
 extrusion 가

meeting  
Expo 가  
pack 2001 IFT  
Nutraceuticals/Functional  
plastic-based system food, Starch/Food hydrocolloids, Nonthermal  
BP amoco amosorb&#61652;3000 Crown, /Thermal processing Food packaging  
Cork and Seal Oxbar&#61652 PET  
PET polymer가 - 가  
가 ascorbic acid가  
ZERO2&#61652 (Southcorp  
Packaging )  
ascorbic acid 가  
Chevron Chemical Co. OSP&#61652



IFT

가