

2.

HPP (kinetics)

“21 CFR 113 ”

HPP가

2가

가

um 10⁻¹²

“ Clostridium botuh- ”

“21 FGR 113 ”

가,

HPP

가

가

HPP

2.1 HPP

가

가

Ball

100MPa

가 2 3

가

가

(oils)

(fats)

100MPa

가

9

가

가

600MPa

(compression-heating ap-

가

가 12 18

paratus)

(co-

2 3log

mpression heating value)

(

: F₀ = 5)

가

가

700MPa 30 2.3 *C. botulinum* (kinetics) HPP가 12-D

132 (6 가).
 $F_0 = 5.0(10 Z \text{ value})$

가 , D-value , 12-D

< > :
 가 가 , Ball

2.2 *Clostridium botulinum* (coldest point)

12-D
C. botulinum 가 가
 10^{12} 가 1) HPP가

botulinum 가
 (type E, A, B) *botulinum* , pressure-dependent log-linear constant)
 type B 가 . 600MPa (transition-state volume changes)
 type B 가 90 (time-dependent exponential decrease)
botulinum type B가 가 C (: 가 , pulsing)
 100 700MPa HPP , 가

< > :
C. botulinum ,
C. botulinum 가
 6-log 가 *C. botulinum* 2 가 12-log
 (:12-D) (extrapolate)

< > :

가 가 , , 가

HPP () (linearity) . Pflug

가 100 15 가

HPP kinetics) 1 (first-order ,

6-log 12-D (12-log 가 HPP

(extrapolate) < > :

2.4 (surrogate organism) historical data)가 (hi-

12-D HPP 가

(HPP) 12-D 가

C. botulinum

C. botulinum 가

C. botulinum HPP

가 가

-log (x-log reduction)가 *C. botulinum*

12-log 3.

가 (single pulse) 가 (multiple-pulse)

2.5 10⁻⁹ HPP

HPP National Center for Food Safety and Techn-

가 10⁻⁹ 가 HPP

가

3.1 HPP

3.2

HPP

HPP (thermal process) (mashed potato) HPP (compression-heating value), (medium temperature), (loading factors), 가 (preheat minimum initial temperature), 가 (basket heating), (barrel temperature), F₀ = 5 HPP

(mashed potato) (ex: C. botulinum) 가 (cocktail approach) 가 10⁶ D 12-D F₀ (HPP +)

HPP (F₀ /) : positive control) 가 C. botulinum 10⁵ F₀ = 0.5, 1.0, 1.5, 2.0, 2.5

() HPP

(most-probable number calculation) F₀ 121 D_F (: D-

HPP 가 2 가 HPP HPP (extended-shelf-life(ESL))

3.3 High-Pressure Processing(HPP)

2000 National Center for Food Safety and Technology(NCFST, 가, HACCP 가) Flow International Corp.(Dual-use Science and Technology(DUST))

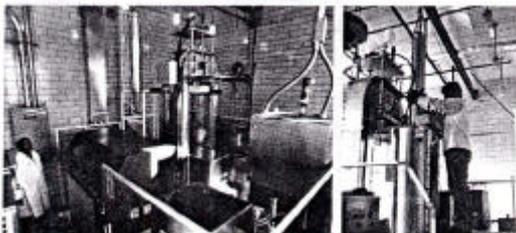
NCFST Institute of Technology Moffett, Flow International kent Basic American Foods, Con Agra Grocery Products co., Hormel Food Engineering Div., Kraft Foods, Natick (:) U.S. Army Soldier and Biological Chemical Command, Unaka Business Development, Washington Farm . NCFST FDA . Flow International Edmund Ting, U.M. Balasubramaniam() NCFST

HPP

4.

. Flow International DUST NCFST 35L 8 (M/T) 가 17L . DUST 2 3 HPP 가

HPP HPP가 . 1 HPP ESL HPP 가 HPP 가 HPP 가 1 HPP 가



<NCFST 35L HPP >

5.

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