

< >

320

Novo가 50% , 100
Daiwa · Amano 25 , 25
89 2760 , 90 3359 (21.7%
가), 91 3722 , 92 3787 10.8%, 1.8% 가
34
Urokinase , 100

(: KG,)								
	1989		1990		1991		1992	
		가		가		가		가
Rennet & Concentrates Thereof	758	65,759	1,308	130,133	1,779	166,021	2,027	193,097
Trypsin	22,566	482,142	41,381	539,680	28,191	469,885	26,486	292,309
Chymotrypsin	4	6,022	2,100	22,071	301	5,451	3	6,345
Alpha-Amylase	453,891	1,505,858	408,272	1,289,201	539,068	1,748,239	417,824	1,263,330
Lipase	5,294	449,969	9,951	665,759	21,030	941,339	25,439	1,203,660
	389,601	7,649,881	446,739	9,385,502	426,556	8,223,099	408,002	8,596,346
Pepsin	923	20,140	795	24,311	834	13,203	645	15,432
Malt Enzyme	10,517	117,210	5,820	55,200	14,659	141,602	17,824	151,069
Papain	1,651	114,870	2,850	97,969	915	58,738	1,560	89,805
Bromelain	5,520	276,940	7,010	376,974	5,180	278,835	5,055	258,306
Amylase	550,130	1,985,920	655,822	2,276,708	645,731	2,211,161	660,449	2,496,869
Protease	857,873	5,543,535	975,333	6,107,236	1,172,301	7,077,369	1,141,130	6,812,914
Pectic Enzyme	2,450	96,385	2,770	91,794	4,420	231,883	1,850	85,291
	219,131	9,286,128	298,152	12,526,608	416,111	15,653,192	406,838	16,403,242
TOTAL		27,600,720		33,588,608		37,220,077		37,868,015

(: , %)										
	1989		1990		1991		1992		1993	
	540	71.1	690	72.6	690	68.3	600	58.1	540	52.9
	220	28.9	260	27.4	270	26.7	250	24.2	250	24.5
	-	-	-	-	-	-	102	9.9	130	12.8
	-	-	-	-	50	5.0	80	7.8	100	9.8
	760	100	950	100	1,010	100	1,032	100	1,020	100

가 798 6738 가
가 644 , 가 300
가 630
2000 , 가 20~30
644 가 가
92 71.6%
461 가 83 , 20
가 가 40
60

(:)			
	Alpha-amylase, Protease, Glucoamylase, Cellulase, Serratipeptidase, Digestive Enzyme, etc.	,	34
	Bacterial Alpha-amylase	,	5
	Digestive Enzyme	,	3
	Glucoamylase()	,	5
	Serratipeptidase	,	8
	Serratipeptidase	,	3
	Urokinase		100

80 Glucoamylase, α
Amylase, Protease Cellulase Glucoamylase ,
Bacterial αamylase ,
Novo Diawa · Kasei · Amano
Genecor · Gist-Brocades
70%
가 , 가
, mild
α Amylase, Glucoamylase(Amyloglucoside) ,
가 , α Amylase, 가가
25~30% 가
가 가 , Glucoamylase
Pullulanase Dextranase 가
가 83 ,

가

Glucanase

Protease

Cellulase, Pullulanase, Pentosanase

 α -Amylase, Glucoamylase,

Novo · Daiwa · Kasei

12

(1992)							(:)	
		(Common name)						
		Alpha-Amylase	KG	60,000	80,000	Novo, Daiwa, Kasei	, 12	
		Amyloglucosidase	"	200,000 (AMG 300L)	750,000	,		
		Alpha-Amylase	"	270,000	810,000	Novo, Daiwa, Kasei	, , , , ,	
		Fungal Alpha-Amylase	"			Genencor, IBIS, Novo		
		Beta-Amylase	"	24,000	300,000			
		Amyloglucosidase	"			Novo, Amano		
		Pullulanase	"	300,000	1,100,000			
		Glucose Isomerase	"	120,000	2,400,000	Novo		
	가	Papain Bromelain, Neutral Protease, Alkaline Protease, Amylase	"	-	400,000	Novo, Daiwa,	, , , ,	
		Pectinase and etc	"	4,000	200,000	Gist-brocades Novo		
	가	Rennet, Lactase and etc	"	4,000	400,000	Chr, Hansen Gist-brocades	, , , ,	
		-	"	982,000	6,440,000	-		
		Alkaline Protease and	KG	1,000,000	6,3000,000	Novo, IBIS	, ,	
		etc	"	300,000	1,000,000	Novo, Daiwa,		
		Alpha-Amylase	"	120,000	1,000,000	Genencor, Rakuto		
		and etc	"			Rohm, Diamalt		
		Pancreatin & Bacterial Protease	"	900,000 1,320,000	1,000,000 3,000,000			

가

가

가

가

Rennet, Lactase

Chr · Hansen, Gist-Brocades

가

가

가,

Amylase Protease

가

Papain, Bromelain

, Novo · Daiwa

Pectin

Pectinase가

Pectinase

Gist-Brocades, Novo

, Amino Acid

가 .

(: 1000)								
			1990		1991		1992	
		KG	18	14,400	15	12,000	10	8,000
		100000U * 100	1,084	1,002,158	357	330,047	680	451,792
		KG	3	15,000	6	30,000	-	-
		KG	460	473,581	510	408,782	410	272,024
		U	-	-	-	640,000	-	548,000
		KG	2,335	218,323	1,485	138,475	875	81,813
		KG	-	-	1,164	602,538	778	328,685
	()	MG			1,000	183,660	335	100,601
		KG	-	-	-	-	161	368,358
		KG	409	368,100	1,065	851,930	670	468,014
			-	2,091,562	-	3,197,804	-	2,627,287

(:)				
	2,660	1,200	200	9.6
	-	-	2,160	
	NIH, IER, CSH	GBF() Inst.Enzy()		
	Johnson & Johnson General Food Miles Labs Pfizer 21	Novo() Hansen() Miles Labs() Sanofi() Finnish s.() Gist-brocades() 20	Mitsubisi Kasei Toyobo Kyowa Hakko 20	() , ,
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-

/

300

200

100

가

420

200

300

100

α Amylase

, Cellulase

Novo Daiwa, Genecor, Rakuto

가
Pancreatin, Bacterial Protease

92 900 100

Rohm · Diamalt

93 , 가

1000 630

가
Protease , Lipase, Cellulase, Amylase

Novo

Korea 50%
 , Gist-Brocades

IBIS가

Solvay

92

가 600 , 250

 , 102

0.5 ~ 1%가

가

가

가 가

798 7000

Urokinase가 166 9000 가

(: %)			
	1990	2000	
	7,000	1.5	10
	70	150	10
	200	400	8

(1992) (:)			
(Common name)			
PGA	KG	32	136,030
Protease	"	1,241	515,190
Serratopeptidase	"	420	593,385
Streptokinase	Musk		
Streptodornase		360,757	1,630,045
Trypsin	KG	54	84,314
Urease & Uricase	-		51,154
Urokinase	Miu	46,366	1,668,921
Others	KG	4,407	805,242
Bromelain	KG	5,280	263,265
Cellulase	KG	10,223	520,156
Cholestrerol Esterase	K U	256	2,900
Cholestrerol oxidase	K U	155	4,520
Chymotrypsin	KG	3	8,130
Deoxyribonuclease	KG	625	409,325
Glucose oxidase	K U	112,000	11,565
Glucose-6-phosphate Dehydrogenase	K U	20	468
Glutamate Dehydrogenase	K U	1,200	1,477
Glycerol kinase	K U	72	12,842
Glycerophosphate oxidase	K U	2,330	30,216
Haemocoagulase			651,430
Hemecellulase	KG	13,460	586,585
		-	7,987, 160

Streptokinase Streptodornase가 163 . Serratiapeptidase 59 3000 ,
Haemocoagulase Hemecellulase가 65 1000 , 58 7000 .
Cellulase가 52 156 , Protease가 51 5190 .
Urokinase Serratiapeptidase ,
. 86 EIA Test 88 88 AIDS
, 92 C , 가
가 가 .
. , , ,
. TPA(Tissue Plasminogen Activator) Urokinase, Streptokinase
, 10~15% .
92 가 4 5200 Urokinase ,
3 6836 Streptokinase .
Amylase, Protease, Lipase, Celluase
. PH 가 PH 가 .
film coating , 가
, PH .
Biodiastase, Lipase, Protease, Cellulase,
Hemicellulase β Galactosidase Pancreatin .
1952 trypsin α -
Chymotrypsin,Cytochrome, Elastase, Lysozyme Serratiapeptid-ase .
가 Serratiapeptidase 40%
, Lysozyme Chloride .
Serratiapeptidase
SOD(Superoxide dismutase) 가 .
. 92 26 2729 91 31 9780 17.8% . 90
20 9156 91 90 52.9% 92
. Serratiapeptidase , Streptokinase,
7 9764 .
Serratiapeptidase 670KG, 410KG 4 6801 , 2
7202 Serratiapeptidase .
875KG , 5 4800
Streptokinase .
가 TPA SOD
. TPA 가 가 , Streptokinase 가
. SOD 가 , 가
Serratiapeptidase, Lysozyme 가 .
, 가

가

92 7000 2000 1 5000

90 70 2000 150
10%

가

Screening

가

Xenozyme

, biosensor, Synzyme, Abzyme,

가

< 1993/9/6>