

(19)
(12)

(KR)
(B1)

(51) 。 Int. Cl. ⁶
C12N 1/20

(45)
(11)
(24)

2001 11 30
10 - 0299544
2001 06 11

(21)
(22)

10 - 1998 - 0037486
1998 09 11

(65)
(43)

2000 - 0019404
2000 04 06

(73)

3가 10 - 1

(72)

2 903 407

16 505

86 1 901

(74)

:

(54)

3.0%, (Pichia) (KCCM - 10129) 10 50%, 0.2

0 5%, 0 5% , ,

가 ,

.

10129 (erythritol) (KCCM -)

(Torulopsis)
(magnoliae), (veratilis) (candida); (Endomycopsis ch
odati); (Hansenula supelliculsa); (Pichia miso);
(Monilliella tomentosa var. pollinis); (Trigonopsis variabilis);
(Trichosporon poronoides); (Candida zeylanoides); (Aureobasidium)
(Leuconostoc oenos)
41%

가 (83.3%) 가 40 50% 2 g/L - h
45%(w/w)
(
(Appl. Environ. Microbiol., 53, 2119 - 2123, 1987).

(*Pichia* sp.) (KCCM - 10129) YM , 10 50
 %, 0.2 3.0%, 0 5%, 0 5% pH 4.5 6.
 5, 27 33
 , 0.2 0.7 Osm/kg 0.8 1.0 Osm/kg
 2 , 0.8 1.0 Osm/kg
 가
 8 16%, 0 5% 0 5%

가 (*Pichia* sp.) (KCCM - 10129)

20% 24 3,000 × g 20 0.
 1M (pH 5.5) 가 2 0.1M (pH 5.5)
 가 10^8 가 N - - N' - - N - (N - methyl - N' - nitro -
 N - nitrosoguanidine) 가 가 100 μ g/mL 30 . 0.1M (p
 H 7.0) 40%, 0.5%, 가(agar) 1.5 %가 30
 (single colony) 250 mL 240 rpm, 30 72
 2.0% 가 50 mL
 가

12 MicroCheck Inc. 1998 6
 KCCM - 10129

0.8 1.2%, 0.4 0.6%, 0.2 0.4%, 0.2 0.4% YM
 , 2.0% KH_2PO_4 $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ 가 0.5% 0.
 02%

YM 50 mL가 250 mL 230 25
 0 rpm, 27 33 24 . YM 50 mL가 250 m
 L 230 250 rpm, 27 33 100
 5 L (()) 가 가
 가 3 L 300 1,200 rpm

0.2 1.0 vvm . pH 5.5 30

가 , 가
 40%가 144 288 g 1.8L 912 1056 g
 1.2L 가 1200 g 3.0L 가
 가 7.0 9.0%, 9.0 11.0%, 11.0 13.0
 %, 13.0 15.0%, 15.0 17.0% 8.0%, 10.0%, 12.0%, 14.0%, 16.0%

가 가 1.8 L 가 1.2 L 20
 3 L가 180 g, 80 g, KH₂PO₄ 15 g MgSO₄ · 7H₂O 0.6 g
 가 1020 g NaCl 60 g

(Carbohydrate analysis column, Waters, USA) HPLC(Shimadzu C - R6A, Japan) Refractive Index Detector (Shimadzu RID - 6A, Japan)
 (acetonitrile) 8 2 , 35 , 1.5 mL/min
 600nm

(,) (specific growth rate of cell)
 (specific production rate of product) 가 In
 gold (Swiss, polarographic type)

Osmometer A0300 (Knauer Co., Germany) 0.4 Osm/kg 12,68
 7g/kg H₂O NaCl , 0.4 Osm/kg 가

(1)

: KCCM - 10129 YM 50 mL가 250 mL
 240 rpm, 30 24

: 3 L가 5 L , 가
 300 1,200 rpm 0.2 1.0 vvm . pH 5.5
 0.5% 0.02% 30 , 2.0% KH₂PO₄ MgSO₄ · 7H₂O가
 1

5 L

(%)	(Osm/kg)	()	(%)	(%)
10	0.52	40	30.0	0
15	0.79	54	38.5	0
20	0.99	66	44.3	0
25	1.31	78	48.2	0
30	1.56	90	52.8	0
35	1.80	120	42.8	2.7
40	2.08	160	27.2	8.9

(2)

2 O가 2 0.5% 1 0.02% , KCl 15% KCl 2.0% 60 KH₂PO₄ MgSO₄ · 7H

5 L KCl

KCl (M)	(Osm/kg)	(%)	(%)
0.00	0.79	38.5	0
0.27	1.07	45.0	0
0.48	1.38	48.5	0
0.62	1.66	53.7	0
0.69	1.82	42.2	0.5
0.84	2.08	28.8	1.5

(3)

2 O가 4 0.5% 1 0.02% , NaCl 15% NaCl 0.5% 60 KH₂PO₄ MgSO₄ · 7H

5 L NaCl

NaCl (M)	(Osm/kg)	(%)	(%)
0.00	0.79	38.5	0
0.27	1.07	36.2	0
0.47	1.37	48.6	0
0.61	1.64	53.7	0.3
0.68	1.80	45.2	1.2
0.82	2.06	27.8	1.9

(4)

5L 30 pH 15% 2.0% KH₂PO₄
 4 MgSO₄ · 7H₂O가 0.5% 0.02% 3L 0.2 1.0 vvm
 가 300 1200rpm pH 4 4

5 L pH

pH	(%)	(%)
3.5	30.4	1.7
4.5	36.6	0.0
5.5	38.5	0.0
6.5	34.7	0.4
7.5	28.2	0.8
8.5	25.5	1.8

(5)

4 pH 5.5

4

5

5 L

()	(%)	(%)
26	25.4	2.4
28	32.3	0.0
30	38.5	0.0
32	37.7	0.0
34	32.2	1.0

(6)

1

6

(%)	(Osm/kg)	(h ⁻¹)	(g/g - h)
10	0.52	0.126	0.050
15	0.79	0.119	0.072
20	0.99	0.110	0.098
25	1.31	0.108	0.113
30	1.56	0.093	0.126
35	1.80	0.079	0.108
40	2.08	0.058	0.088

(7)

2 KCl

7

KCl

KCl (M)	(Osm/kg)	(h ⁻¹)	(g/g - h)
0.00	0.79	0.120	0.072
0.27	1.07	0.116	0.098
0.48	1.38	0.110	0.120
0.62	1.66	0.100	0.126
0.69	1.82	0.088	0.102
0.84	2.08	0.062	0.087

(8)

3 NaCl

8

NaCl

NaCl (M)	(Osm/kg)	(h ⁻¹)	(g/g - h)
0.00	0.79	0.120	0.072
0.27	1.07	0.115	0.096
0.47	1.37	0.109	0.117
0.61	1.64	0.098	0.123
0.68	1.80	0.085	0.098
0.82	2.06	0.060	0.084

(9)

1

1

가

40%가

144 2

88 g

1.8L

912

1056 g

1.2L

가

1200 g

3.0L

가

가

7.0 9.0%, 9.0 11.0%, 11.0 13.0%, 13.0 15.0%, 15.0 17.0%

8.0%, 10.0%, 12.0%, 14.0%, 16.0%

가

가

9

가

(%)	(Osm/kg)	(%)	(h)
8.0	0.49	16.7	104
10.0	0.63	20.8	90
12.0	0.78	20.0	86
14.0	0.93	18.2	84
16.0	1.09	15.6	96

(10)

1

30%

2.0%

, 0.5% KH₂PO₄0.02% MgSO₄ · 7H₂O

30 , pH 5.5

5 L

10

5 L		30%	
(h)	(g/L)	(g/L)	(g/L)
0	0.3	300	0
14	7.5	269	5
20	10.2	248	12
27	12.0	225	20
40	14.2	174	47
54	15.7	123	79
67	16.8	70	109
83	17.3	19	143
90	17.5	0	160

(11)

10 1.8 L 가 1.2 L 20 3 L가
 180 g, 80 g, KH₂PO₄ 15 g MgSO₄ · 7H₂O 0.6 g 가
 1020 g NaCl 60 g 0.7 Osm/kg
 10.0% NaCl 가 가 NaCl
 NaCl 가 가 10

5 L		40%	
(h)	(g/L)	(g/L)	(g/L)
0	0.3	100	0
6	4.2	91	0
12	15.2	77	15
20	18.0	46	40
20.1	16.9	100	37.5
30	18.8	108	71
40	19.8	100	100
55	20.9	92	152
67	21.3	28	192
72	21.5	0	212

(57)

1.

(Pichia) (KCCM - 10129) YM , 10 50%,
 0.2 3.0%, 0 5%, 0 5% pH 4.5 6.5,
 27 33

2.

1 , 0.2 0.7 Osm/kg 0.8 1.0 Osm/kg
 2

3.

1 , 0.8 1.0 Osm/kg 가 8 16%, 0 5%
0 5%

4.

3 , 가 ,

5.

(Pichia) (KCCM - 10129)