



sterol vitamin

sterol vitamin D₂ .
 가 . vitamin D₂
 . vitamin D₂ HPLC
 HPLC ,
 . Sterol GC ,
 . sterol trimethylsilyl ester .
 sterol vitamin
 D₂ , vitamin (4.7-194µg
 /100g) . Ergosterol 가 sterol
 , (296-489 mg/100g) (602.1-678.6 mg
 /100g) . Vitamin D₂ ergosterol
 , 가
 . vitamin D₂ .

1.

taxonomy
 Ergosterol vitamin D₂ phylogenesis
 . Vitamin D₂ ergosterol Vitamin D .
 . Ergosterol 280-
 320nm UV 가 . vitamin D
 , 가 () 가 .
 previtamin D₂ tachysterol lumisterol .
 previtamin D₂
 vitamin D₂가 (Jones , 1985; (Lamberg-Allardt , 1993).
 Parrish, 1979; Singh, 1985). vitamin D rickets oste-omalacia
 ergosterol vitamin D₂ ,
 . (Eastell and Riggs, 1997).
 (Young &
 Ga- mes, 1993). ergosterol vitamin D source

(Mattila, 1994),

Cha-
ntarellus tubaformis vitamin D₂

(Outila, 1999).

Mattila (1994) pool

vitamin D₂

가

ergosterol sterol

rol, sterol ste-
가

가

sterol

postsqualene

stereochemistry

(ergosterol) 28

(Parks and Weete,1991).

sterol 가

sterol, ergosta-5,7- dienol, 24-methyl chol-
esterol methylene cholesterol
(Lyznik and Wojciechowski, 1981; Weete and
Gandhi, 1997).

sterol

sterol

Piirnen (2000)

sterol cholesterol

가

가

sterol sterol

가

가

vita-

min D₂ sterol 가

vitamin D₂가 ergosterol

vitamin

D₂ ergosterol

2.

2.1

Pleurotus ostreatus, Agaricus bisporus

/, *A. bisporus/ Lentinus edodes*

sterol vitamin D₂

(1.5 kg)

1cm³

30ml

50-70g

- 18

Sterol

. Vitamin D₂

vi-

tamin D

(Mattila, 2001).

vitamin D

sterol

sterol vitamin

vitamin D₂

가

Helsinki

(*Chamrarellus cibarius*; 10)

(*C. tubaformis, Boerus edulis*

Lactarius trivialis; 3 kg)

. *C. cibarius* 5

15 kg

vitamin

D sterol

. 4

- 18

- 18

2.2.Vitamin D

vitamin D₂(ergocalciferol)

Mattila (1992)

Mattila (1994)
 (2-10g)
 petroleum ether diethyl ether
 n-hexane n-Hexane
 isocratic HPLC
 150 $\mu\ell$ methanol (7%)
 100 $\mu\ell$ HPLC
 vitamin D₃
 vitamin D₂
 (Mattila, 2001).

sterol
 sterol ergosterol(5,7,22-cholestatrien-24-methyl-3-ol, Steraloids Inc)
 calibration
 ergosterol UV ($\lambda=282\text{nm}$;
 $\epsilon=11900 \times \text{mol}^{-1}\text{cm}^{-1}$; ethanol; Mw=396.6g/mol)
 calibration
 5-200 μg ergosterol 20 μg
 cholesterol 2
 ergosterol
 sterol
 GC(Varian
 3400 GC; Finniganmat Incos 50MS)가

2.3 Sterol

sterol
 GC
 cholesterol(160-400 μg)
 (0.1g) 8ml ethanol 85
 30 0.5ml KOH
 12ml 가
 20 ml cyclohexane
 1/10
 Sterol trimethylsilyl(TMS)
 Toivo (2000)
 GC, RTX-5w/Integra
 fused silica capillary column(60 \times 0.32mm i.d.,
 cross bonded 5% diphenyl-95% dimethyl polysiloxane, 0.1 μm film; Restek)
 0.7 ml/min helium (ml/min)
 3
 sterol er-
 gosterol(5,7,22-cholestatrien-24-methyl-3-ol),
 ergosta-7,22-dienol(7,22-cholestadien-24-methyl-3-ol),
 ergosta-5,7-dienol(5,7-cholestadien-24-methyl-3-ol),
 fungisterol(7-cholesten-24-methyl-3-ol)
 Ergosterol

270
 EI mode
 70eV 가
 100-600 m/z
 160 270
 Ergosterol, ergosta-7,22-dienol, ergosta-5,7-dienol,
 fungisterol TMS ethers
 468, 470, 470 472 m/z 가
 (M⁺) Ergosterol, ergosta-5,7-dienol sterol
 m/z 143
 m/z 363 365, TMS가
 가 methyl M⁺
 Ergosta-7,22-dienol fungisterol ergosta-7,22-dienol sterol m/z 255
 C-22
 (Lyznik and Wojciechowski, 1981; Rahier and Benveniste, 1989).
 Ergosterol A. bisporus
 (0.1g) 0.39 0.78mg ergosterol spike
 가 ergosterol 94.6%(n=6)
 3.

3.1 *C. tubaformis* , 가
Lentinus
, *C. cibarius*, *C. tubaformis*, *B.*
edulis *Lactarius trivialis*가
가
가
Chantarellus ergosterol vitamin
D₂ 가
가 vitamin D₂
. (table 1). sterol
625 774mg/ 100g
C₂₈ sterol ergosterol, ergosta-7,22
-dienol, ergosta-5,7-dienol, fungisterol
; *A. bisporus*/
, *A. bisporus*/
, *P. ostreatus*
Lentinus edodes (0.1 µg/ 100g) vita
-min D₂ (Mattila , 2001)
(table 1).
3.2
vitamin D₂ sterol
(*C. tubaformis* *C.*
cibarius)가 vitamin
(table 2).
, UV ergosterol ergo-
calciferol vitamin D₂
. Mattila (1994)
가 *A. bis-*
porus (0.21 µg/ 100g)
vitamin D₂ (2.91-29.82 µg/ 100g)
. (Huang , 1985; Lyznik and
Wojciechowski, 1981; Parks and Weete,
1991; Senator, 1992; Yokokawa and Mitsu-
hashi, 1981).
(Huang , 1985; Koama , 1984)
ergosterol
ergosterol 가
Trigos (1997) Pleur-
otus (,
sodium acetate) ergoste-
rol 가 , Huang
(1985) *Lentinus edodes*
가
A. bisporus/
, *A. bisporus*/
, P.

Table 1. sterol (mg/ 100g)

	Ergosterol	Ergosta-7, 22-dienol	Ergosta-7, 5-dienol	Fungisterol	Dry matter(%)
<i>Agaricus bisporus/ white</i>	654	15.2	94.0	25.8	7.7
<i>A bisporus/ brown</i>	602	14.6	47.1	13.5	7.8
<i>Pleurotus ostreatus</i>	674	15.4	83.3	17.6	8.0
<i>Lentinus edodes</i>	679	16.7	28.5	62.7	8.4

ostreatus sterol ergosta-5,7-dienol 7%~12%
 Lentinus edodes fungisterol sterol 8%
 ergosterol
 sterol . Yokogawa
 Mitsuhashi(1981) *Lentinus edodes* ergosterol
 fungisterol , ergosterol
 ergosta-5,7-dienol
 Huang (1985) ergosterol fungisterol
 ergosta-5,7-dienol sterol
 . Lyznik Wojciechowski(1981)
Agaricus campestris *Agaricus*
P. ostreatus sterol
 ergosterol
 ergosta-5,7-dienol 32.6 mg/kg
 sterol 78.7% 13.6%
C. cibarius, *C. tubaformis*, *B. edulis* *Lactarius trivialis* ergosterol
 296 489 mg/100g
 , Huang (1985) Koyama (1984)
 . Ergosterol *C. cibarius* ergosta-5,7-dienol
Lactarius trivialis ergosta-7,22-dienol
 fungisterol , *B. edulis*
 C₂₈ sterol
 sterol sterol
 10, 30 15% . Ergosterol *C. tubaformis* sterol
 vitamin D₂
 ergosterol , vita-
 min D₂ (1-194μg/100g)가
 ergosterol (296-679 mg/100g)
)
 ergosterol

vitaminD₂ . *C. tubaformis*, *B. edulis*, *Lactarius trivialis*
 가 가
 vitaminD₂
C. cibarius
 vitamin D₂
 vitamin
C. cibarius
 가
 vitamin D₂
 . Poongkodi Sakthisekaran(1995)
 , , , C, tocopherol *Pleurotus* *Agaricus*
 Ergosterol
 , vitamin D₂
 Ergosterol(vitamin D₂)
 가 . Huang (1985) *Volvariella volvacea* ergosterol
 sterol 가
 (Huang , 1985). *Centinus edodes* 가 ergosterol
 , 가 (Ono , 1974). Table 2
C. cibarius, *C. tubaformis*
Lactarius trivialis 가 ergosterol

vitamin D₂

3.3

vitamin D₂

Table 2.

	vitamin D ₂ (µg/ 100g)			Dry matter (%)
	sterol	ergosterol	vitamin D ₂	
<i>Chan-tarellus cigarius</i> ^a				
Whole	84	304	11.1	
Pileus	102	140	9.9	
Stipe	24	100	10.4	
Gill	115	278	13.1	
Mush-room 1	24		9.3	
Mush-room 2	129		10.0	
Mush-room 3	150		9.7	
Mush-room 4	55		11.8	
<i>Chan-tarellus tubaefor-mis</i>				
Whole	194	377	7.0	
Pileus	337	367	5.7	
Stipe	187	345	7.6	
Gill	104	439	9.3	
Mush-room 1 (9.3g ^b)	194		6.3	
Mush-room 2 (9.3g)	169		6.9	
Mush-room 3 (9.2g)	410		7.4	
Mush-room 4 (11.8g)	324		5.9	
<i>Boletus-edulis</i>				
Whole	4.7	489	12.4	
Pileus	22.0	589	10.4	
Stipe	2.1	444	12.2	
Gill	2.0	549	12.2	
Mush-room 1 (121 g)	9.8		11.1	
Mush-room 2 (89.5 g)	4.8		10.7	
Mush-room 3 (99.7 g)	25.0		11.2	
Mush-room 4 (85.6 g)	5.7		13.7	
<i>Lactarius-trivialis</i>				
Whole	29.0	296	6.0	
Pileus	53.0	335	4.9	
Stipe	7.3	235	7.0	
Gill	6.0	346	8.0	
Mush-room 1 (9.3g ^b)	24.0		5.9	
Mush-room 2 (9.3g)	30.0		6.2	
Mush-room 3 (9.2g)	39.0		6.9	
Mush-room 4 (11.8g)	11.0		6.4	

^a Information of weights of individual mushrooms is missing

^b Weight of individual mushrooms

(Table 2).

가

, 가

vitamin D₂

- vitamin D₂ *America Journal of Clinilcal Nutri- tion*, 568, 684-689.
- Vitamin D
- (Mattila , 1992, 1995; Mattila , 1997, Mattila , 1999).
- 6.
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