

Development of Neutaribeosut Varieties (*Pleurotus ostreatus*) Chongpung, Myongwol

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ABSTRACT

This study was carried out to find a useful mushroom at Chungnam Agricultural Research And Extention Service. Twenty materials used were collected from domestic and exotic area. These races were compared botanical characteristics to leading varieties by PCR-RAPD methods. Mycelial growth temperature of Chongpung and Myongwol were at 20 to 25°C and 25 to 30°C at PDA medium, respectively mycelial growth of these varieties were similar at pH 6.5 to 7.5. In case of mushroom cultivation temperature ranges, Chongpung was at 5 to 26°C and Myongwol was at 7 to 28°C, but the optimum temperature range of these were appeared at 15 to 19°C. Culture temperature of these was 23°C and period of mycelial culture was needed 23 to 24 days under 850cc/pp, while was needed 11 to 12 days at waste cotton medium. Cap color of these at first inducing mushroom was all dark blue, but at late growing stages Chongpung was shown as grey, and Myongwol was shown as dark grey. Yield of Chongpung was appeared as 46kg/3.3m² and that of Myongwol was 41kg/3.3m², while Chunchu No2 as check was 40kg/3.3m². Results from PDA medium and PCR-RAPD analysis two of these were different from others.

Key Words : Chongpung, Myongwol, Chunchu, Mycelial growth, Waste cotton medium.

FOREWORD

Pleurotus ostreatus is classified as Basidiomycetes, Tricholomataceae, Pleurotus. But these 20 varieties were developed and supplied at early 2,000 years (Lee et al 2,000, Kim et al 1998,)

P. ostreatus among *Pleurotus spp* was mainly cultivated in Korea, which was self-Nutritian at dead tree of a broad leaved tree by destoryed lignin and fibrous(Hashmiot et al 1974) As medium for growing of pleurotus, poplar and material wood of broad leaved tree were used as artifical cultivation.

According to increasing of cultivation areas by rice

straw, cottonseed and sugarcane residue, low cost agricultural products have developed and are using at present (Lee et al 1998, Jo, Yun et al 1995,)

Total yield per year of *Pleurotus* in Korea was 84,000 ton as 65%, their major functions were known as anti-cancer, imbecility, inhibition of aging, health, beauty and health food from contamination.

Therefore, little knowledge to cultivation technology and development of new variety were needed. Furthermore broadening cultivation area and farmers benefit increasing through *Pleurotus* cultivation of high quality were also needed.

The ChungNam RAD collected races for five years through whole Korean areas and cultivated these races at various conditions.

Results from experiment new varieties, Chongpung and Myongwol, were selected and these varieties were accepted from Seed Consideration Association of RAD in Suwon.

HISTORY OF SELECTION

Twenty races were used for development of new varieties and these races were cultivated under various temperature, day length, humidity, pH etc. (Chang 1989)

The CNS 96003 and CNS 96005 among races used were selected through experiment during 1998 to 1999 at RAD Chungnam.

These two races selected were supplied five provinces and cultivated for the farmer practice experiment two times in one year.

Result from experiment, yield and characteristics

were superior to basic varieties as check Chunchu No. 2.

Accordingly, these two new varieties were named as Chongpung and Myongwol, and then were endowed to farmers through National Race Cultivation Office at 2000.

MAJOR CHARACTERS

1. Mycelium growing characters

As shown in Table 1 race growing temperature of Chongpung at PDA medium was 20 to 25 °C, while was 25 to 30 °C in Myongwol. Race cultivation temperature of Chongpung was low about 5 °C then to Myongwol and others and race growing was also slowed comparatively. But race growing densities was similar, at pine saw medium especially. (Jo 1995)

2. Cultivation temperature at each growing stage

The temperature ranges of the Chongpung and Myongwol developed newly was broadened as 5 to 28 °C. Therefore, cultivation method was easy and simple.

Race culture temperature of these was delayed about one to two days than 22 days of The Wonhyung neutaribeosut but harvest date of these on shelf the cotton waste medium was shortened about 4 to 3 days than check, Chunchu No. 2 (Table 2, 3).

Growing optimum temperature of Chongpung was shown 15 to 19 °C while Myongwol was 13 to 19 °C. Cap color of Chongpung at early stages was dark-blue and Myongwol was dark-purple respectively, but their colors at late was appeared commonly as dark-gray.

Table 1. Temperature condition for mycelial growth on the PDA medium during 7 days. (unit : mm)

Temperature Variety	15 °C	20 °C	25 °C	30 °C
	Chong pung	19.3	33.3	47.6
Myong wol	18.3	21.7	54.4	42.1
Won hyong	23.0	34.3	64.6	63.1

Table 2. Optimum temperature at each growth stage for mushroom culture.

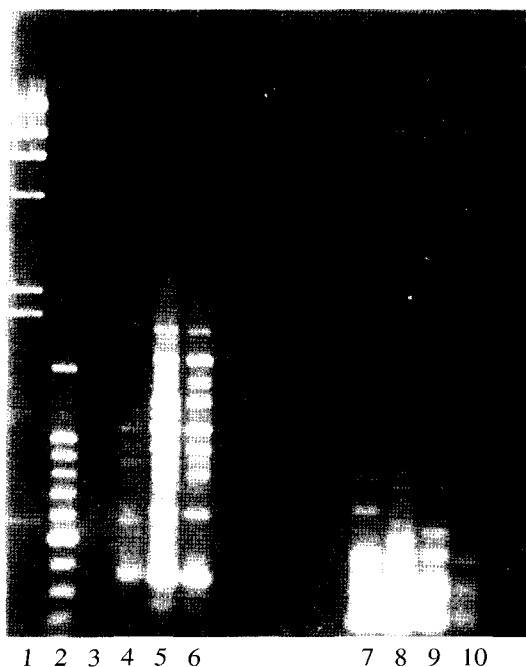
Characters Varieties	Days to mycelial growth (Days/bottle)	Temperature of mycelial growth (°C)	Optimum temperatur for mushroom initiation (°C)	Optimum temperature for growth mushroom (°C)
Chong pung	23	20~25	15~17	15~19
Myong wol	24	25~30	13~17	13~19
Won hyong	22	25~30	10~12	13~15

Table 3. Characteristics of fruiting body on using cotton waste medium for mushroom varieties used.

Characters Varieties	Days to Initiation primodium (days)	Fruiting bundle (no/bundle)	Individual basidiocarp			
			Thickness of pileus (mm)	Length of stipe (mm)	Diameter of stipe (mm)	Size of pileus (mm)
Chong pung	5	11	10	70	13	60
Myong wol	6	12	9	75	12	62
Won hyong	12	18	7	57	13	54

* Condition of analysis PCR-RAPD

- Annealing temp : 55°C, 1min
- Random primer : 20mer(VRP)
- GEL loading : TBE buffer(45mM Tris-borate, 1mM EDTA pH8.0), 1.8% Agarose gel
- Electroporesis : 5 vol/cm



- ▶ Primer - URP1F
 - No3 : Chun chu 1
 - No4 : Chun chu 2
 - No5 : Chong pung
 - No6 : Myong wol

- ▶ Primer - URP2F
 - No7 : Chun chu 1
 - No8 : Chun chu 2
 - No9 : Chong pung
 - No10: Myong wol

Fig 1. Random amplified polymorphic DNA profiles from 4 isolate of *Pleurotus ostreatus* using URP primer.

Therefore, these varieties will be contribute to marketing, storage and transport. Especially temperature change was very important at early germination temperature for Neutaribeosut occurrence.

3. Genetic analysis by PCR-RAPD

This experiment was carried out to protect from the TRIPS on new developed varieties. Result from the RAPD analysis using primer URP1F and URP2F these varieties were different from others shown as Fig.1(Kim 1995, Kim 1998)

4. Growing characters an Shelf and Bottle culture

Characters of these varieties on pine saw medium were shown as Table 3 and 4. Neutaribesou occurrence temperature on the bottle culture was appeared as 17 ± 1 °C, while was 17 ± 3 °C on shelf cotton medium.

Days to early germination were needed 5 and 6 days in Chongpung and Myongwol respectively. These days was shortened about 2 to 3 days than Chunchu No 2.

In bottle medium and late stage than early yield was high and easy at cultivation, length of fruitbody was high as 1.3cm and cap length was 3mm fresh wt was 2g than check Chunchu No.2(Table.4)

5. Neutari Yield of Chongpung and Myongwol

Yield of Myongwol was high as 41kg/m² and Chongpung as 46kg/m² compared to 40kg/m² of check, Chunchu No.2(Table.5)

Among local adaptation Taeon was very highest while Kongju is lowest (Table. 5)

In Bottle culture, yield of Chongpung as 117 g /850 cc is higher than that of Wonhung Neutari beosut was 90 g /850cc.

The Length stipe and size pileus of Myngwol was good, at bottle culture is superior to others.

6. Considerations to culture

Air Circulation was needed after water supply and need to not be dried absoulty.. Especially these varieties were needed enough water on shelf cultivation.

LITERATURE CITED

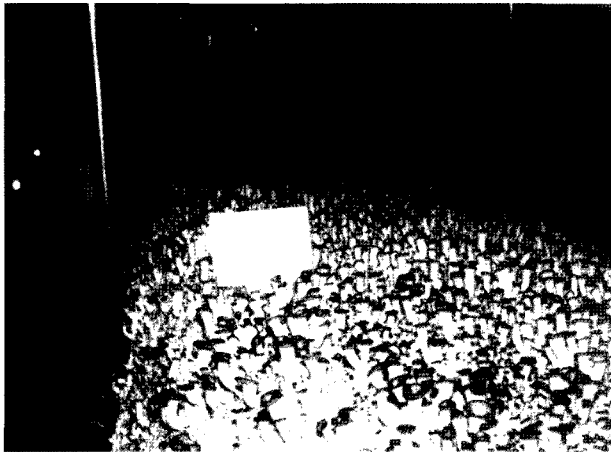
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Table 4. Yield and characteristics of mushroom varieties cultivated on pine sawdust medium in P.P bottle.

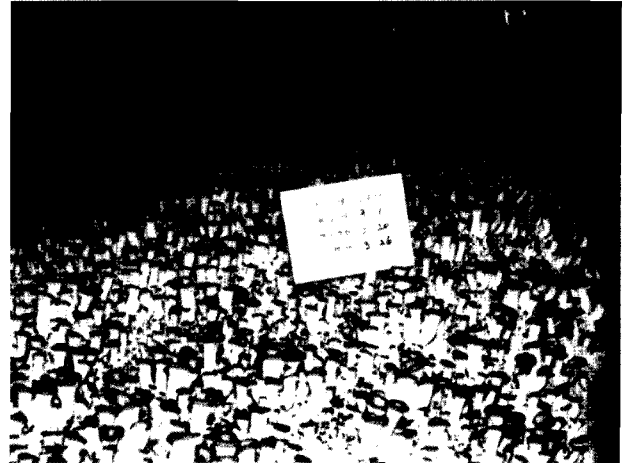
Division Varieties	Length of stipe (cm)	Diameter of stipe (cm)	size of pileus (cm)	Thickness of pileus (cm)	Fruiting Bundle (No)	Individual weight (g)	CaP Color	Yield (g /850cc)	Index (%)
Chong pung	7.0	1.3	6.0	1.0	6	22	Gray	117	130
Myong wol	7.5	1.2	6.2	0.9	9	20	Dark gray	107	119
Won hyong	5.7	1.3	5.4	0.7	18	17	Soft gray	90	100

Table 5. Fruiting body yield of *Pleurotus ostreatus* at five city-gun on cotton waste medium.

Varieties	Yield(kg/3.3m ²)				
	Kongju	Tanggin	Taeon	Yeongi	Average
Chong pung	43	46	50	44	46
Myong wol	36	42	47	39	41
Chun chu No2	38	39	43	41	40



Chong Pung



Myong Wol

Fig 2. Morphology of fruiting body Using cotton waste on Chong Pung and Myong Wol.

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Received 2000. 3. 20
Accepted 2000. 6. 20