IMPROVEMENT OF COMMERCIAL STRAINS OF EDIBLE CULTIVATED MUSHROOMS BY HYBRIDIZATION OF *PLEUROTUS ERYNGII* AND *LENTINULA EDODES*

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Introduction. *Pleurotus eryngii* and *Lentinula edodes* are cultivated edible mushrooms widely appreciated in Asian countries due to its health promoting properties and their delicate texture and taste. In the USA both mushrooms are "gourmet" products and Mexico could develop as an important supplier to this market [1].
To provide commercial strains with improved characteristics, a breeding program was undertaken to develop hybrid strains of both genera.

Methods. Hybrids were produced by mating neohaplontes previously recovered by dedikaryotization of commercial strains of *P. eryngii* and *L. edodes* [2, 3]. To evaluate morphologies and productivities (i.e. Biological efficiency), 11 hybrids and 4 parental strains were fruited on "*L. edodes"* and "*P. eryngii"* substrates.

Results. Fruit bodies were harvested for 8 weeks on *"L. edodes"* substrate and for 12 weeks on *"P. eryngii"* substrate. Table 1 shows that 4 of the 6 hybrids with *L. edodes* morphology presented biological efficiencies higher than 100% (119-153%) while parental *L. edodes* strains ranged from 34 to 68%.

Table 1. Biological efficiencies of hybrids with *L. edodes* morphology

Strains	Biological efficiency (g fresh fruit bodies / 100 g dry substrate)	
	Substrate type	
	L. edodes	*P. eryngii*
	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$
L10	34 ± 9^{A}	
PeC40 / L18-2S	51 ± 16^{B}	44 ± 8^{a}
L21	$63 \pm 4\ B^{C}$	
L18	68 ± 7^{C}	
PeC40 / L18-1S	91 ± 13^{D}	55 ± 7^{b}
PeC40 / L10-1S	119 ± 15^{E}	54 ± 3^{ab}
PeC40/ L10-4S2	124 ± 7^{E}	61 ± 8^{bc}
PeC40 / L10-4S	124 ± 7^{E}	54 ± 3^{ab}
PeC40/ L21-2S	153 ± 9^{F}	69 ± 12^{c}

Different letters indicate significant differences on the same substrate

Lower biological efficiencies (13 to 67%) than the parental *P. eryngii* dikaryon (151%) were yielded on *P. eryngii* substrate by the 5 hybrids with *P. eryngii* morphology (Table 2). Although some of these hybrids produced higher yields on "*P. eryngii"* substrate and others on "*L. edodes"* substrate, only one hybrid, PeC45/L21-3S, surpassed 100% biological efficiency. Nutrient requirements are therefore probably inherited by each group of strains in a different pattern.

Table 2. Biological efficiencies of hybrids with *P. eryngii* morphology

Strains	Biological efficiency (g fresh fruit bodies / 100 g dry substrate)	
	Substrate type	
	P. eryngii	*L. edodes*
	$\bar{x} \pm \sigma$	$\bar{x} \pm \sigma$
PeC20/L21-3S	44 ± 7^{B}	14 ± 2^{a}
PeC29/L21-3S	61 ± 9^{CD}	21 ± 6^{ab}
PeC12/L21-3S	13 ± 2^{A}	33 ± 4^{b}
PeC27/L21-3S	67 ± 11^{D}	56 ± 8^{c}
PeC45/L21-3S	56 ± 6^{C}	112 ± 18^{d}
P. eryngii	151 ± 11^{E}	

Different letters indicate significant differences on the same substrate.

Conclusions. Pairing neohaplonts of different genera of edible mushrooms allowed recovery of high yielding hybrids. Genetic improvement of cultivated fungi by this procedure might thus contribute to increase profitability of mushroom growing.

References.

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