

## Supplementary Data

**Table S1.** Retention times of compounds 1–14 (see Figure 3).

Peak Number	Compound	<i>A. phalloides</i> (Italy)	<i>A. phalloides</i> (California)	<i>A. virosa</i>	<i>L. brunneo-incarnata</i>	<i>L. josserandii</i>
1	$\beta$ -amanitin	9.021	9.003	-	9.005	-
2	$\alpha$ -amanitin	9.300	9.289	9.289	9.290	9.496
3	amanin	10.100	10.092	-	10.095	-
4	phallisin	10.306	10.290	-	-	-
5	$\gamma$ -amanitin	-	-	-	-	10.384
6	phallisin-I	10.585	-	10.568	-	-
7	amaninamide	-	-	11.150	11.144	-
8	phallacidin	11.563	11.542	11.549	-	-
9	phallisin-II	12.724	12.674	-	-	-
10	phalloidin	15.176	15.151	15.188	-	-
11	unknown	15.524	15.495	-	-	-
12	unknown	-	-	16.624	-	-
13	unknown	-	-	16.951	-	-
14	unknown	17.315	17.299	17.311	-	-

**Figure S1.** ITS sequences from the six species of *Lepiota*.

### *Lepiota brunneoincarnata*

TCCGTAGGTGAACCTGCGGAAGGATCATTATTGAATAAACTTGGTGGGTTGTTGCTGGCTT  
 CTTGGAGCATGTGCACGCTCATCGACTTTATCCATCCACCTGTGCACCTTCTGTAGTCTTC  
 GAAATGAAAGCGGCTGAGCCTCGATGGGCATTTTGCCCTATCGGATGTGAGGAATGCTTT  
 TGTGAAGGCATGGCTCTCCTCAAAGGCCTGTGATCGTTTCTTGGACTATGTTTTTCCATAT  
 ACCACATAGCATGTTGTAGAATGTATCGGTGGGCTCTGTGCCTATAGAACTCAATACAA  
 CTTTCAGCAACGGATCTCTTGGCTCTCGCATCGATGAAGAACGCAGCGAAATGCGATAAG  
 TAATGTGAATTGCAGAATTCAGTGAATCATCGAATCTTTGAACGCACCTTGCGCTCCTTGG  
 TATTCGAGGAGCATGCCTGTTTGAAGTGTCAATTAATTCTCAACCATGCTGGCTTTGTAAA  
 GGTCAGTTGTGGCTTGGATTGTGGGGGATTCTCTGCGGGTCTCTCTTGAGGTTCGGCTCCCC  
 TAAAATGCATTAGCAGAACCGTTTGCGGTCAGTCGCAGGTGTGATAATTATCTACGCCAA  
 AGACCAAGGCTGCTCTCTGTTTGTTCAGCTTCTAATTGTCTCGGGACAAATTTTTTTGAAT  
 GTTTGACCTCAAATCAGGTAGGACTACCCGCTGAACTTAAGCATATCAATAAGCGGAGGA

*L. magnispora* (synonym *L. clypeolaria*)

TCCGTAGGTGAACCTGCGGAAGGATCATTATTGAATAACTATGGTGGGTTGTTGCTGGCTT  
 CTTGAAGCATGTGCACACCTGCTGTCTTTATCTATCCCCTGTGCACCATTTGTAGTCTTG  
 GAGGGGAAGAGCGGTGAAGCTCACATGCCCCCCTTCCGGGTCTATGTCTTTTCCACAA  
 ACATTGTAGTATGTCACAGAATGTAATCAAAGGGTCTTTGTGCCATAAACTATATACA  
 ACTTTCAGCAACGGATCTCTTGGCTCTCGCATCGATGAAGAACGCAGCGAAATGCGATAA  
 GTAATGTGAATTGCAGAATTCAGTGAATCATCGAATCTTTGAACGCACCTTGCCTTCTTG  
 GTATTCCGAGGAGCATGCCTGTTTGAGTGTCAATTAATTCTCAATCCCTTCCAGTATTCTG  
 GTTGTGGCTTGGATATTGGGGGTTTCTGCAGGCCTTATTATGTTGAGGTCAGCTCCCCTAA  
 AATACATTAGCAGAACTGTTTGCGGTCTGTCACTGGTGTGATAATTATCTGCACCAAGGCT  
 GCTTCTATCTTGTTCAGCTTCCAACCGTCTTCTTGGAGACAACCTATTGAACATTTGACCTC  
 AAATCAGGTAGGACTACCCGCTGAACTTAAGCATATCAATAAGCGGAGGA

*L. echinacea*

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 CGCTCCTTGGTATTCCGAGGAGCATGCCTGTTTGAGTGTCAATTAATTCTCAACCCTTCCA  
 GtTWTaaTgaCtTGGGTaaGTGGATTGGATTGTGGGGGCTTGTGCTGGTCGTTTACTGCGGTCCG  
 CTCTCTGAAATGTATTAGCGGAACTGTTTGCGGTCCGTCCTCACTGGTGTGATAATTATCTac  
 GcCgaAgACgAAGGCTGCTCTCTATACGTTTCACTTATAATCaGTCCCCTcTGGtGGACAAC  
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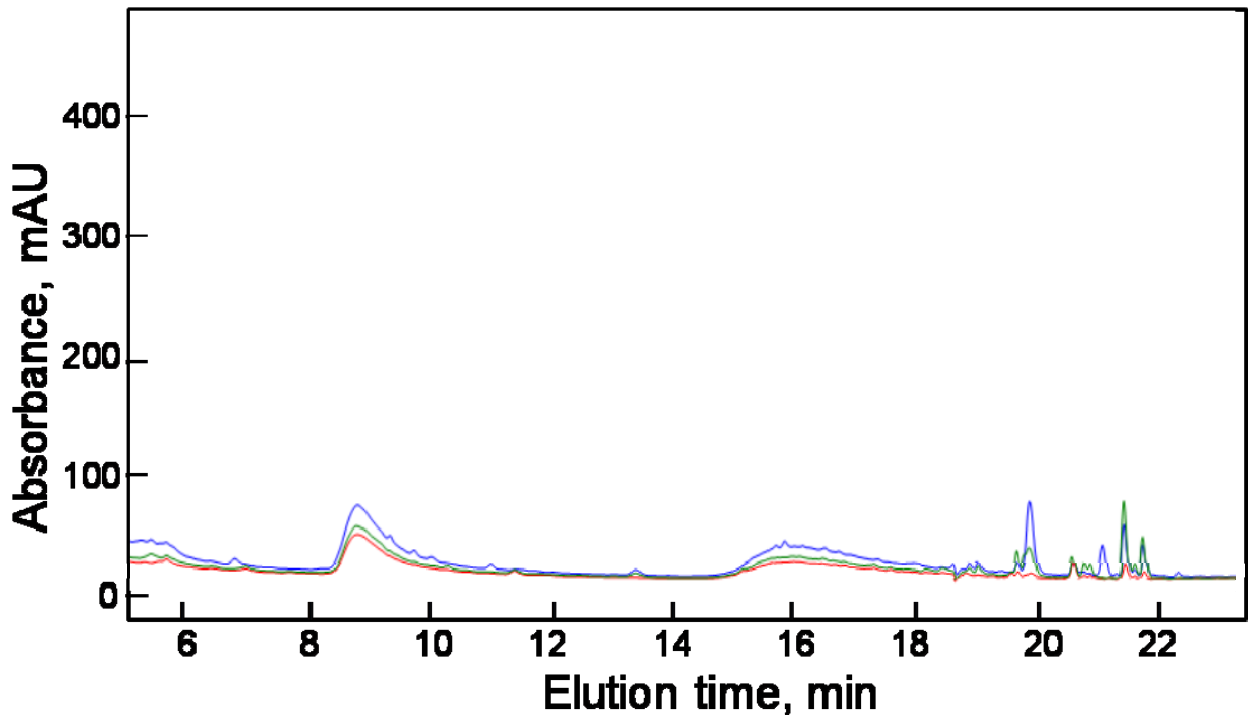
*L. cristata*

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 TGGATGTGGCTTGGATGTTGGGGGTTTCTGCGGGCCTCTCTTTTGAGGTCGGCTCCCCTGAA  
 ATGCATTAGCGGAACCGTTTGCGGTCCGTCGCCGGTGTGATAATTATCTACGCCATAGACG  
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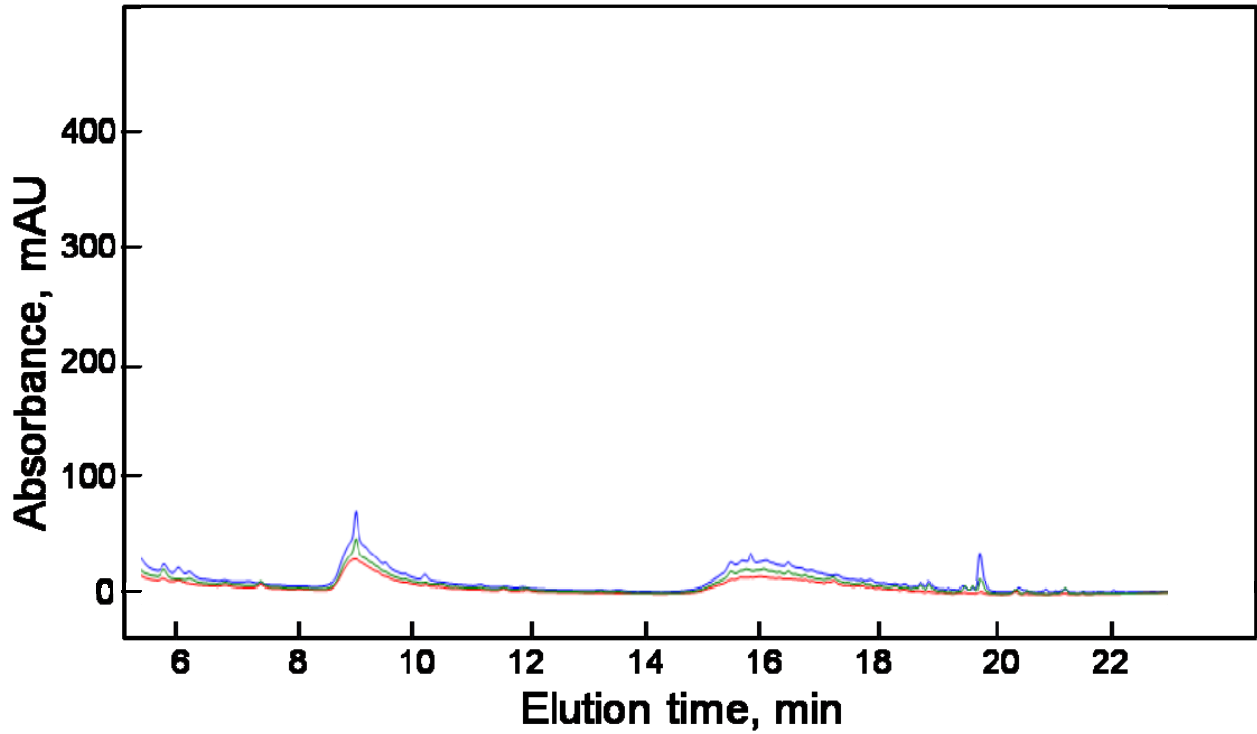
*L. josserandii* (synonym *L. subincarnata*)

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 ACTTTCAGCAACGGATCTCTTGGCTCTCGCATCGATGAAGAACGCAGCGAAATGCGATAM  
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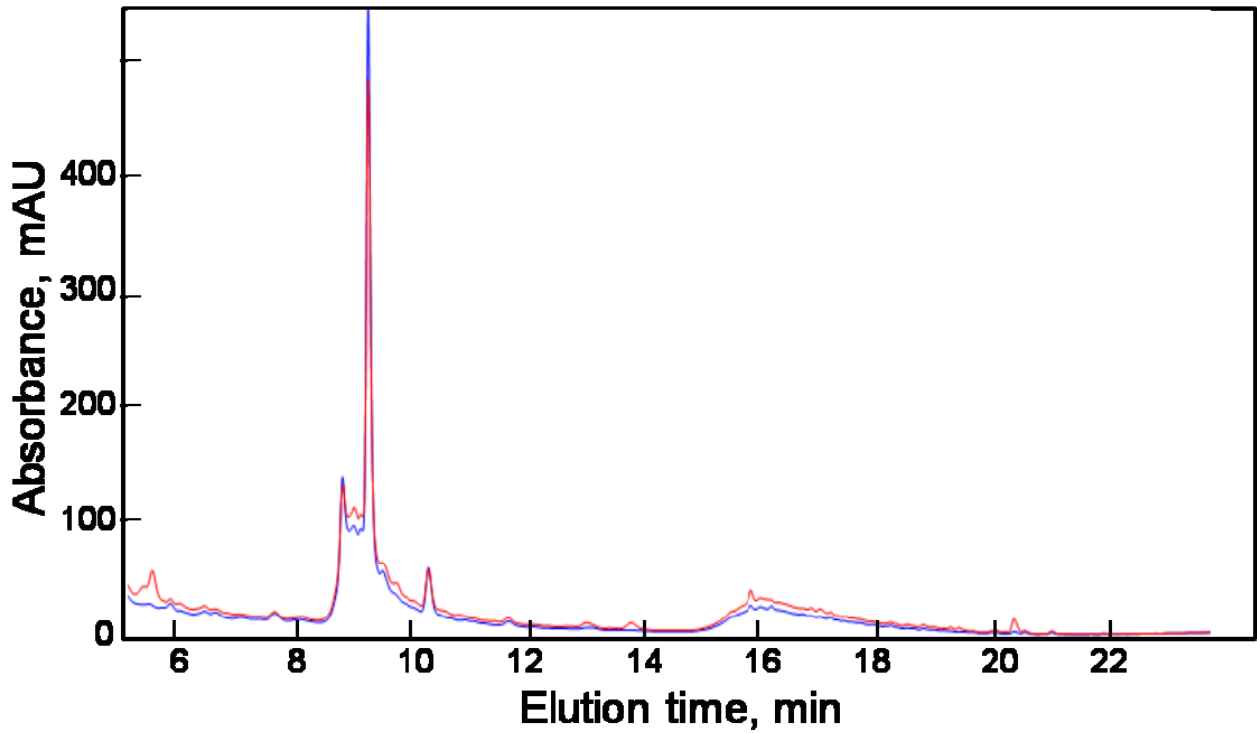
**Figure S2.** UV trace of *L. cristata* Sample #2. No amatoxins or phallotoxins were detected by UV or MS.



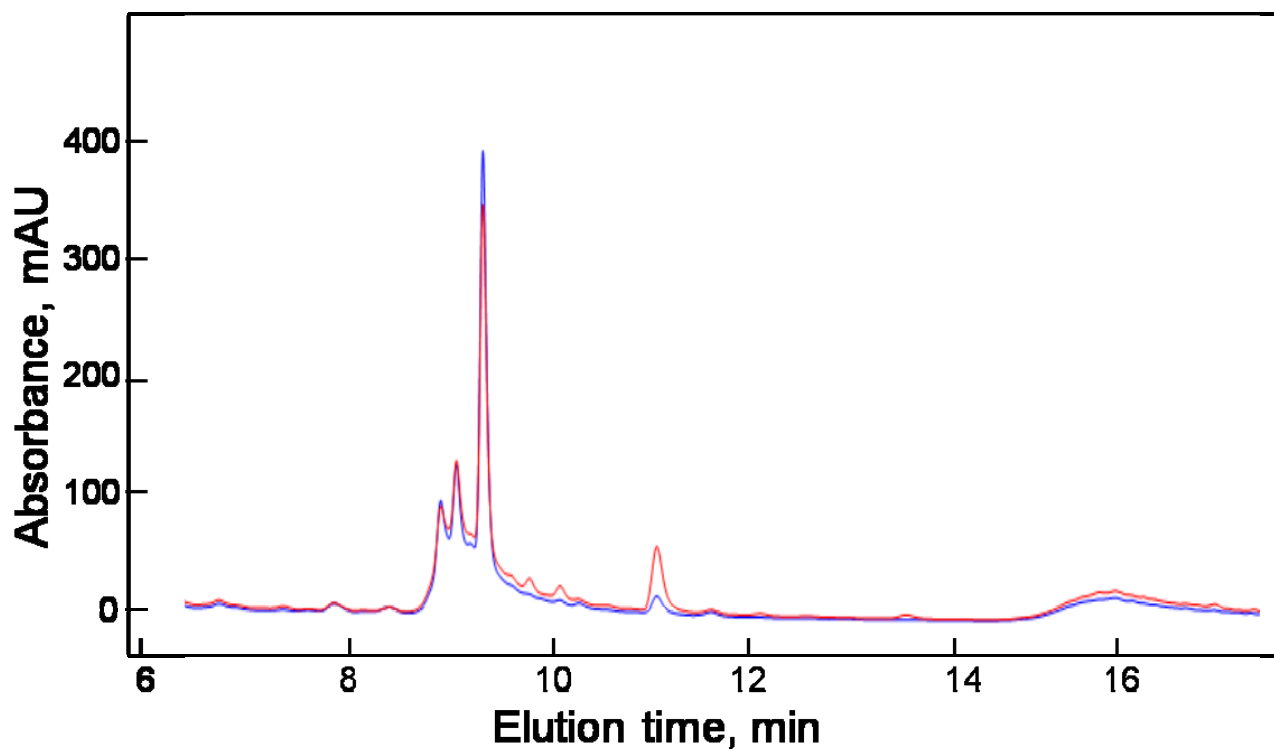
**Figure S3.** UV trace of *L. cristata* Sample #3. No amatoxins or phallotoxins were detected by UV or MS.



**Figure S4.** UV trace of *L. josserandi* Sample #2. By UV and MS,  $\alpha$ -amanitin,  $\gamma$ -amanitin, and a trace of amaninamide were present.



**Figure S5.** UV trace of *L. brunneoincarnata* Sample #2. By UV and MS,  $\alpha$ -amanitin,  $\beta$ -amanitin, and traces of amanin and amaninamide were present.



**Figure S6.** UV trace of *L. josserandi* Sample #3. By UV and MS,  $\alpha$ -amanitin and  $\gamma$ -amanitin were present.

