

Drying behavior of the marketed mushrooms *Lactarius deliciosus* and *Agaricus bisporus*



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Objective

The aim of the present work was to compare the forced convective hot-air drying of *Lactarius deliciosus* and *Agaricus bisporus* in respect to their drying kinetics in order to achieve more knowledge in the drying characteristics of these species. Moreover, the suitability of different models was also analyzed.

Introduction

Wild edible mycorrhizal mushrooms have great commercial importance, as well as beneficial properties, linked to their nutritional value, delicacy and flavor. *L. deliciosus* is greatly appreciated worldwide, being frequently used in the preparation of several culinary dishes. *A. bisporus* is a commercial mushroom also quite used. However, mushrooms are extremely perishable and shelf life of fresh mushrooms is very short. Therefore, they are frequently processed, being dehydration one of the possible preservation methods.

Mushrooms studied in the present work

Lactarius deliciosus



Agaricus bisporus



Methodology

- Slices of both species were weighed and immediately hot-air dried at 45°C. At regular intervals of time, samples were removed and weighed;
- Determination of:
 - Moisture contents (W, kg water/kg dry matter);
 - Moisture ratios: $mr = [(W-W_e)/(W_0-W_e)]$, where W, W₀ and W_e were the instantaneous, initial and equilibrium moisture contents, respectively.



Results and Discussion

- Initial moisture contents:
L. deliciosus = 92.64 0.58% and *A. bisporus* = 89.21 1.90% (wet basis).

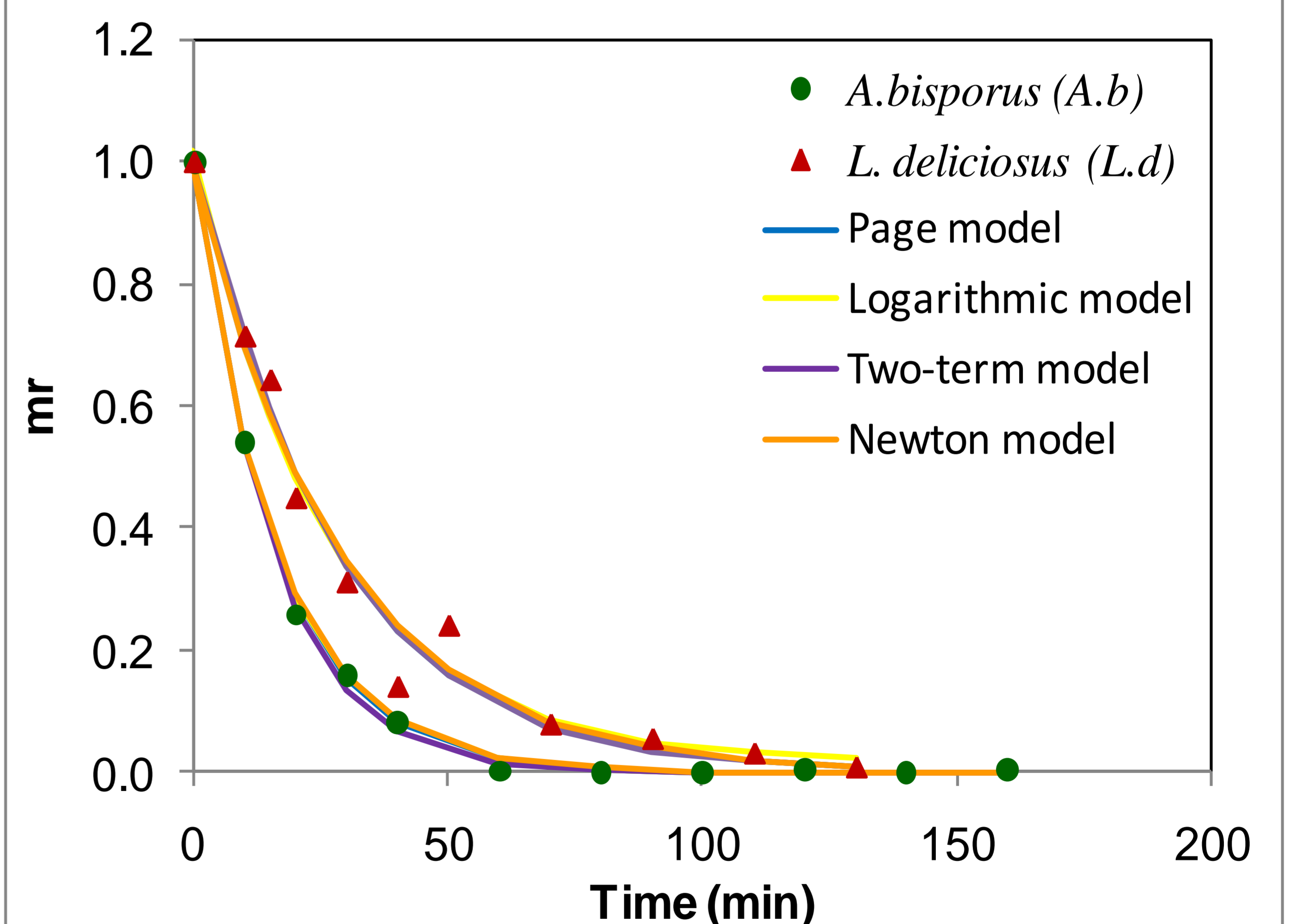
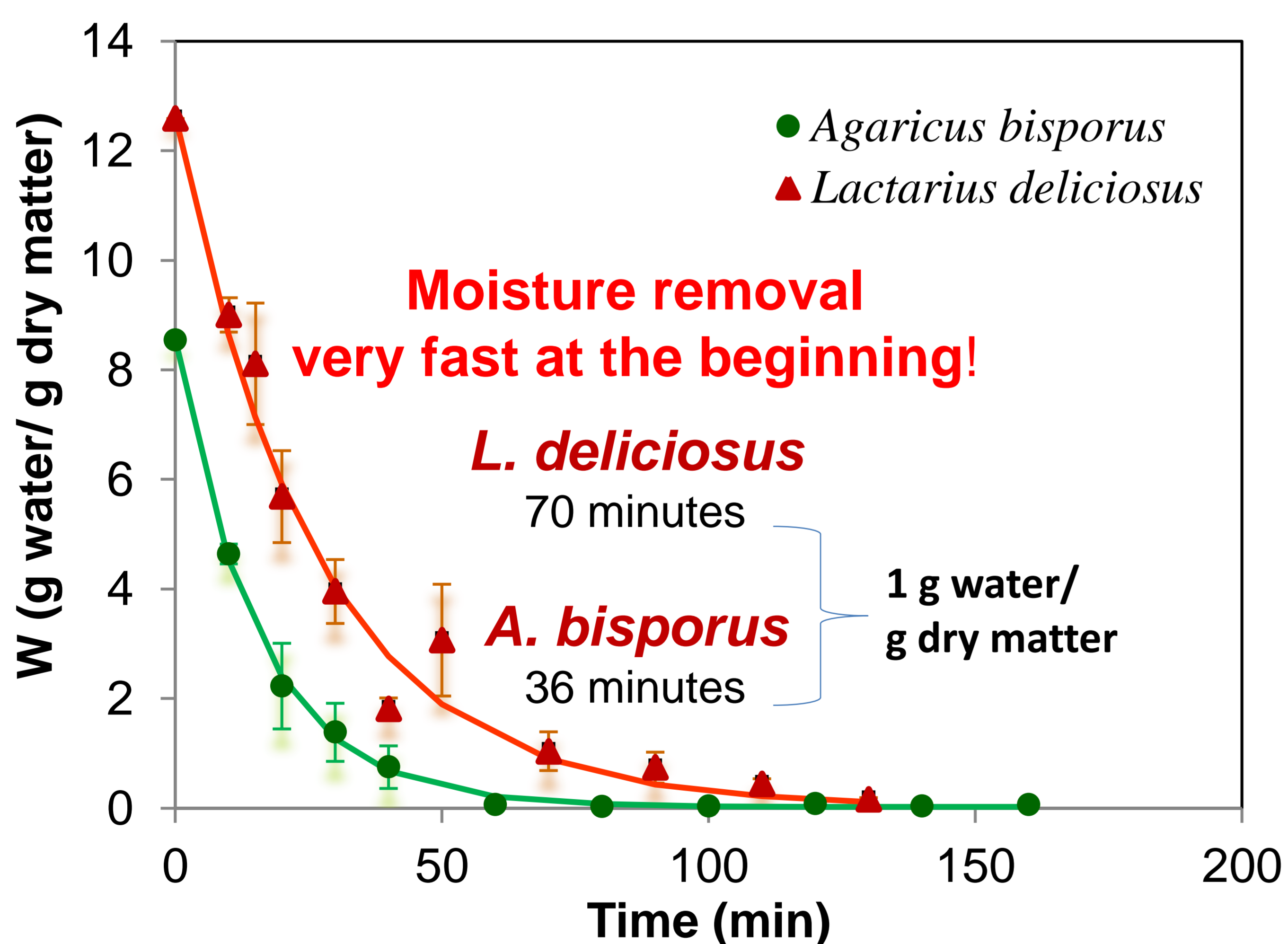


Table. 1. Various mathematical models used in the present work

Name	<i>Lactarius deliciosus</i>	<i>Agaricus bisporus</i>
Newton	$mr = \exp(-0.0353t)$ (adj $r^2 = 0.982$)	$mr = \exp(-0.0613t)$ (adj $r^2 = 1.000$)
Page	$mr = \exp(-0.0333t^{1.03})$ (adj $r^2 = 0.974$)	$mr = \exp(-0.0592t^{1.013})$ (adj $r^2 = 0.999$)
Logarithmic	$mr = 0.0148 + 1.00 \exp(-0.0382t)$ (adj $r^2 = 0.973$)	$mr = -0.000312 + 1.00 \exp(-0.0616t)$ (adj $r^2 = 0.999$)
Two-term	$mr = 1.07 \exp(-0.0385t) - 0.0662 \exp(-9.23t)$ (adj $r^2 = 0.955$)	$mr = 1.08 \exp(-0.0697t) - 0.0819 \exp(-19.5t)$ (adj $r^2 = 0.999$)

NEWTON MODEL



The best fit

Conclusions

- *Lactarius deliciosus* presented an initial higher moisture content than *Agaricus bisporus*, spending two-fold more time to dry.

- For both mushrooms the most suitable drying model was the Newton model.