

## **Supporting information**

**Fig. S1. Changes in lignocellulose content in the substrate during the 5 growth phases of *G. lucidum* G0119.** Groups marked with different letters were significantly different at the 0.05 level.

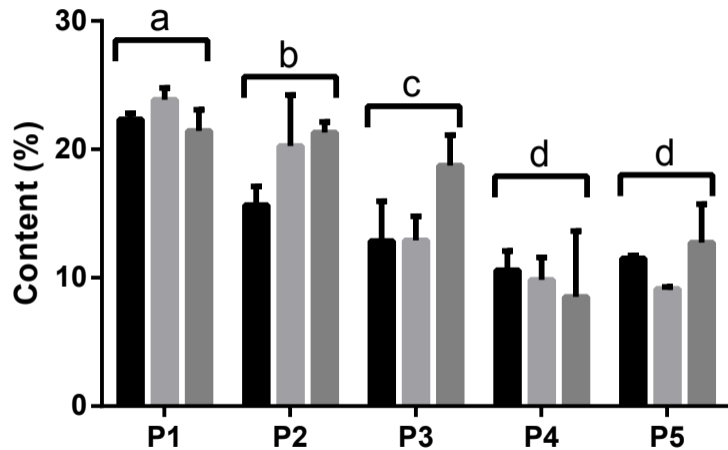
**Fig. S2. Changes in carbohydrate contents in the substrate and fruiting bodies during the 5 growth phases of *G. lucidum* G0119.** Groups marked with different letters were significantly different at the 0.05 level.

**Fig. S3. Changes in triterpenoid contents in fruiting bodies during the 5 growth phases of *G. lucidum* G0119.** Groups marked with different letters were significantly different at the 0.05 level.

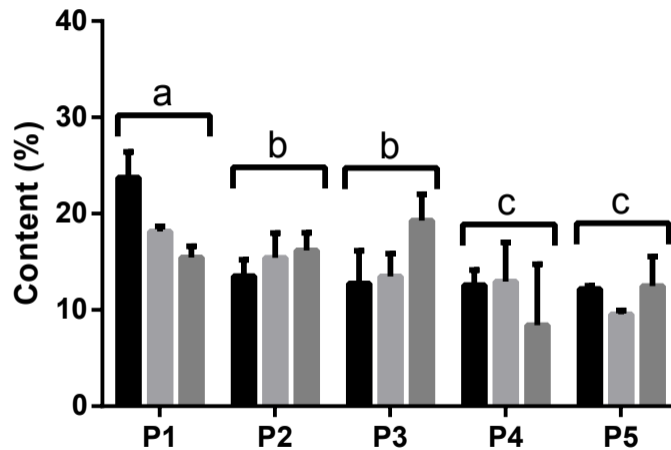
**Tab. S1. Genes involved in lignocellulose, carbohydrate and triterpenoid metabolism in the genome of *G. lucidum* G0119.**

**Tab. S2. Genes encoding CYPs in the genome of *G. lucidum* G0119 and their Pearson correlation coefficients with the expression of LS throughout the growth cycle.**

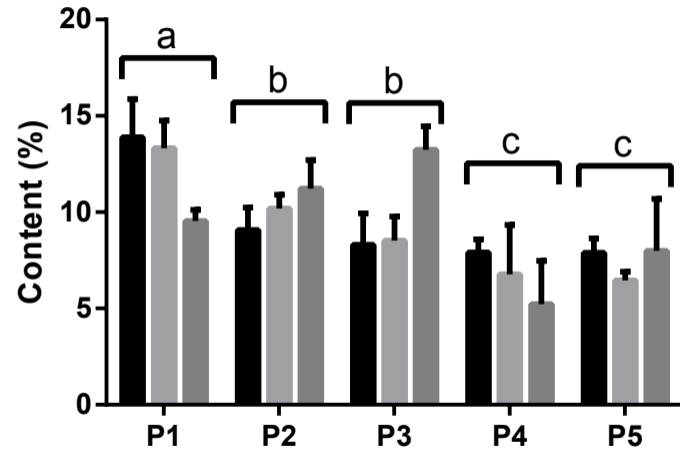
### Lignin



### Cellulose

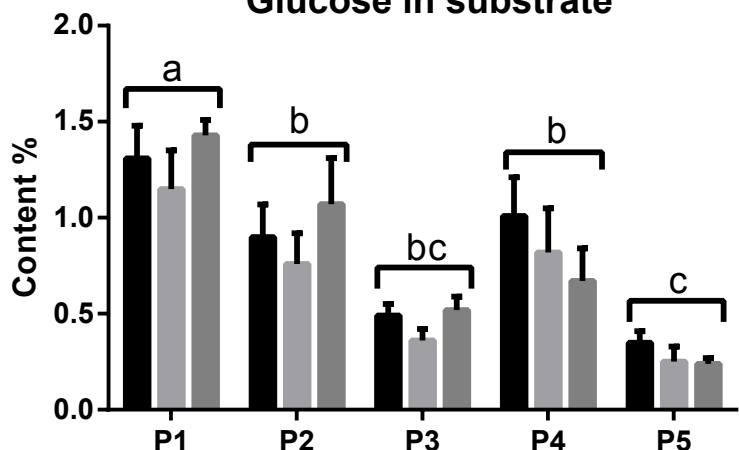


### Hemicellulose



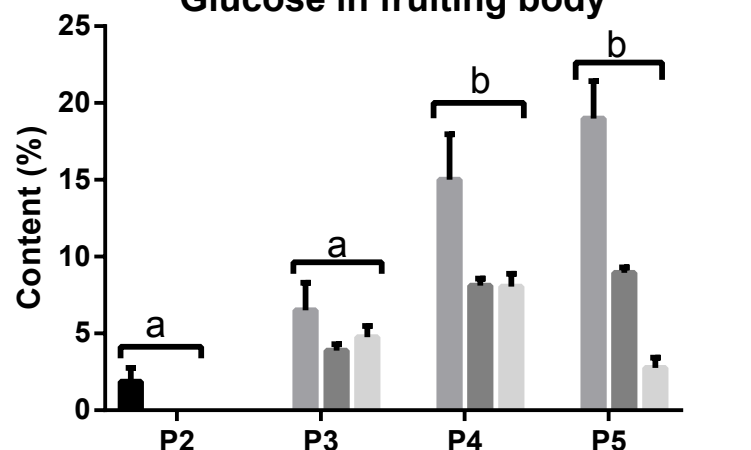
■ Upper layer    ■ Middle layer    ■ Lower layer

**Glucose in substrate**



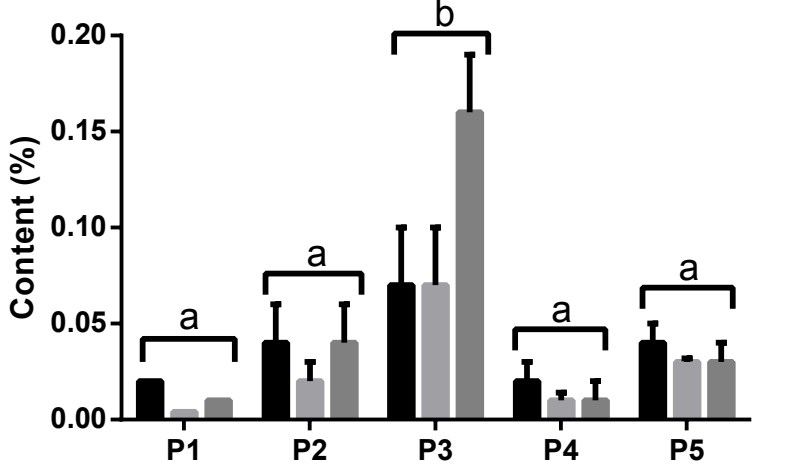
Upper layer Middle layer Lower layer

**Glucose in fruiting body**



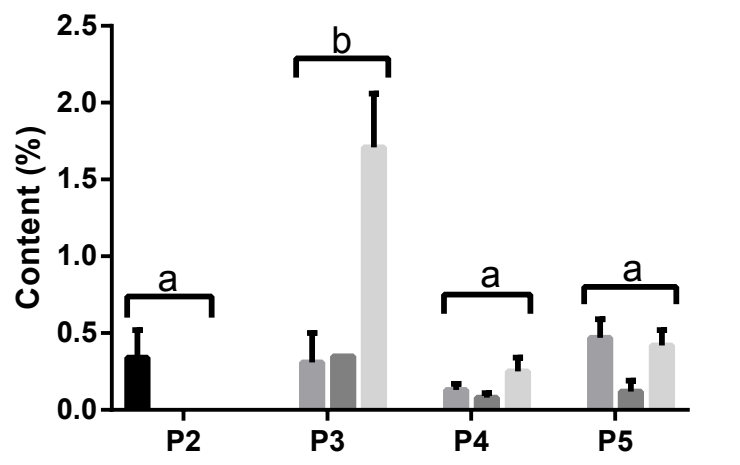
Primodium Pileus Stipe Base

**Trehalose in substrate**



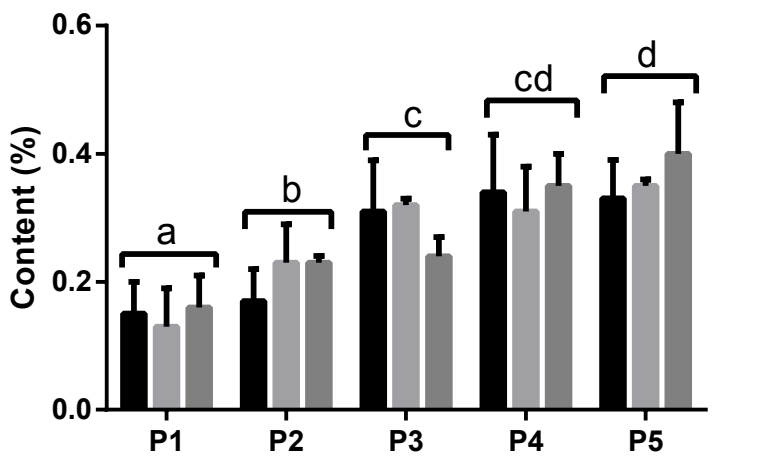
Upper layer Middle layer Lower layer

**Trehalose in fruiting body**



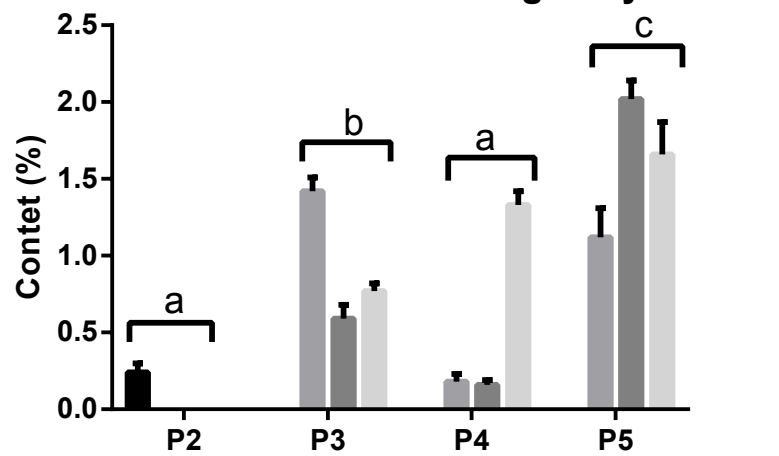
Primodium Pileus Stipe Base

**Arabinitol in substrate**



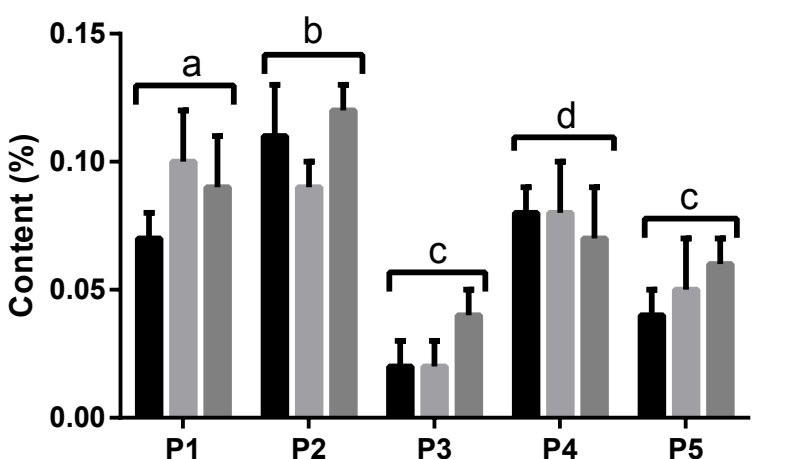
Upper layer Middle layer Lower layer

**Arabinitol in fruiting body**



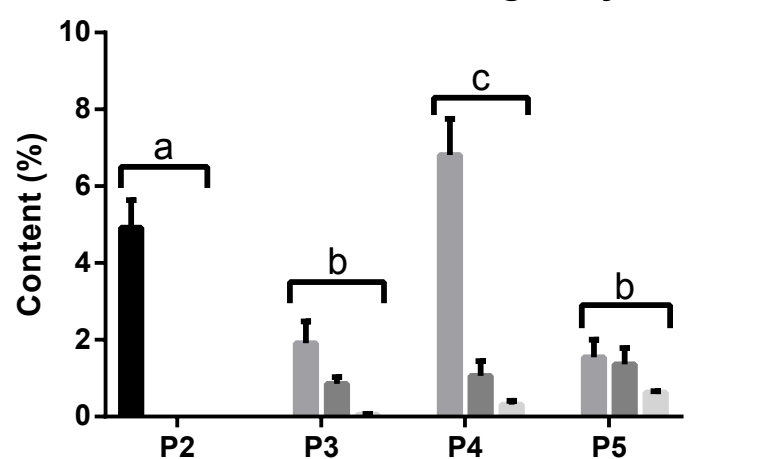
Primodium Pileus Stipe Base

**Mannitol in substrate**



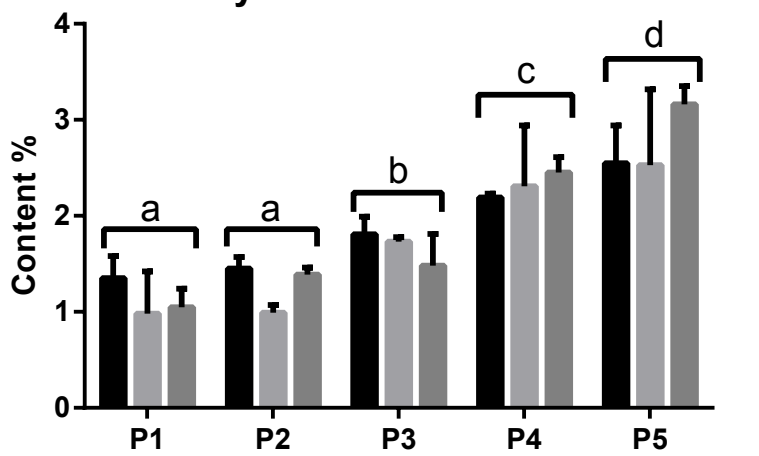
Upper layer Middle layer Lower layer

**Mannitol in fruiting body**



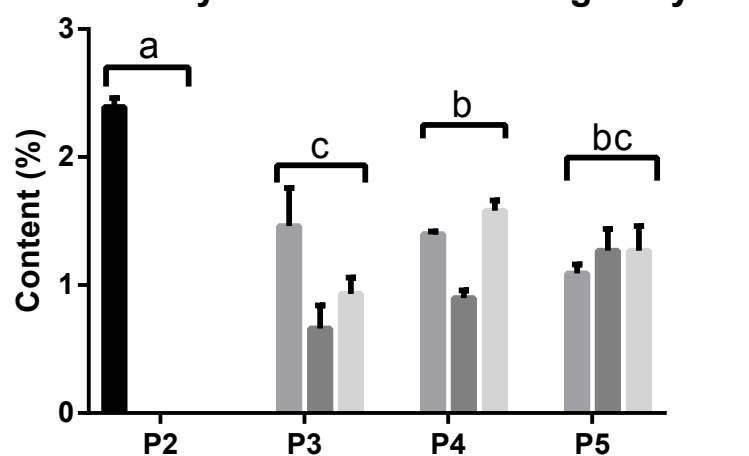
Primodium Pileus Stipe Base

**Polysaccharide in substrate**

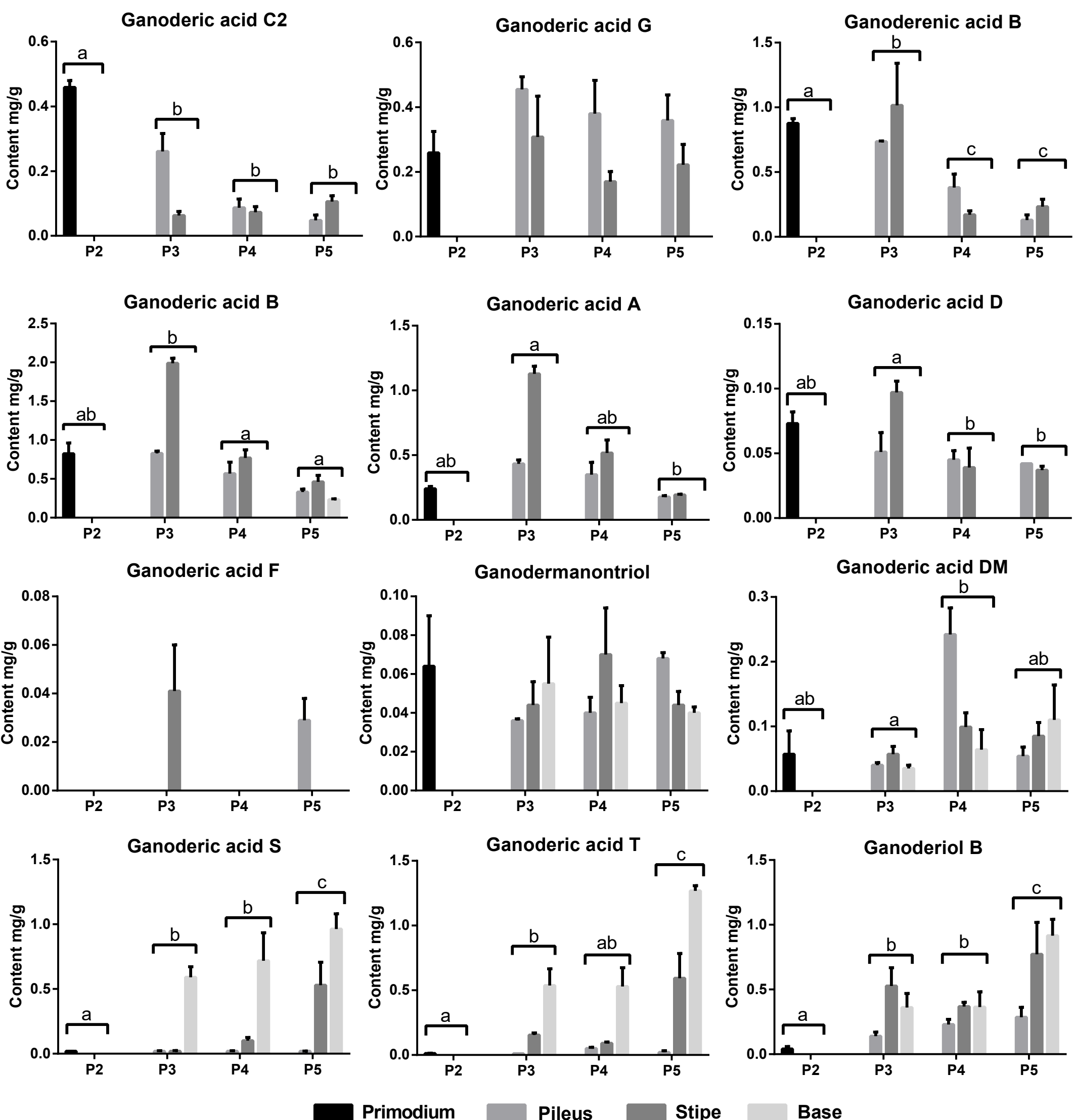
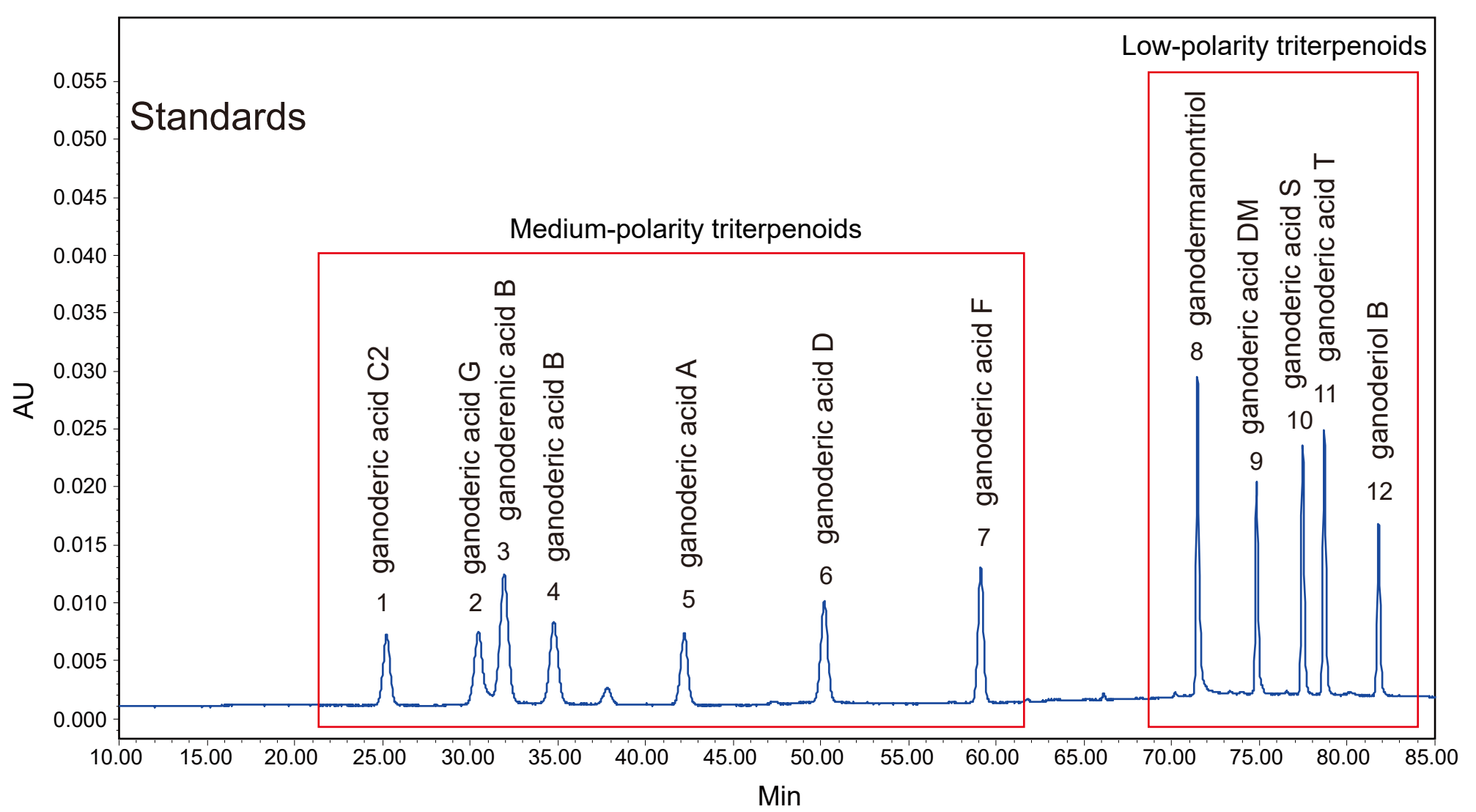


Upper layer Middle layer Lower layer

**Polysaccharide in fruiting body**



Primodium Pileus Stipe Base



Primodium
  Pileus
  Stipe
  Base