

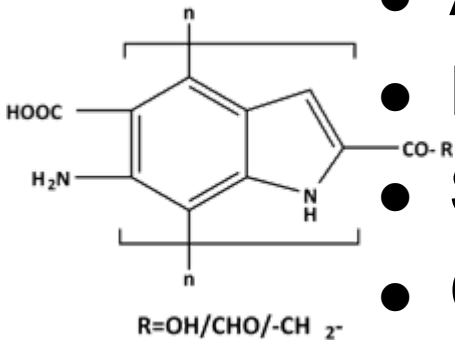
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Physicochemical properties, molecular structure, antioxidant activity, and biological function of extracellular melanin from *Ascosphaera apis*

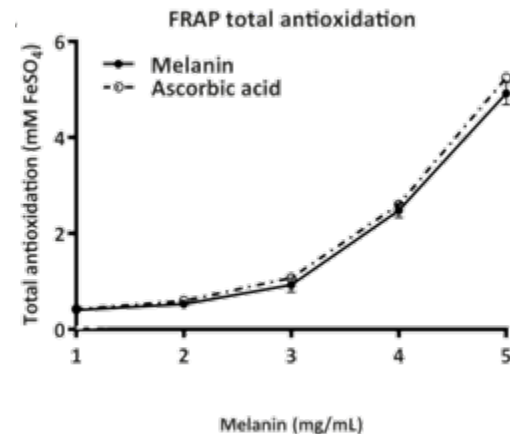
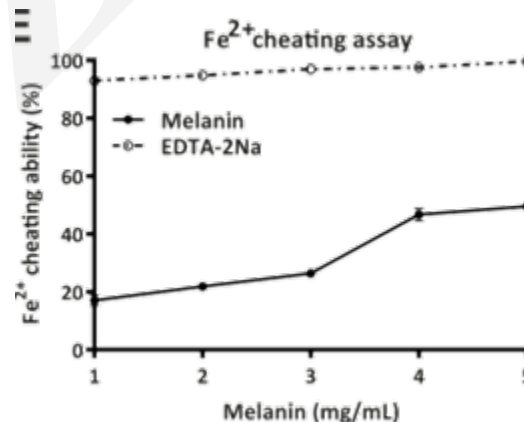
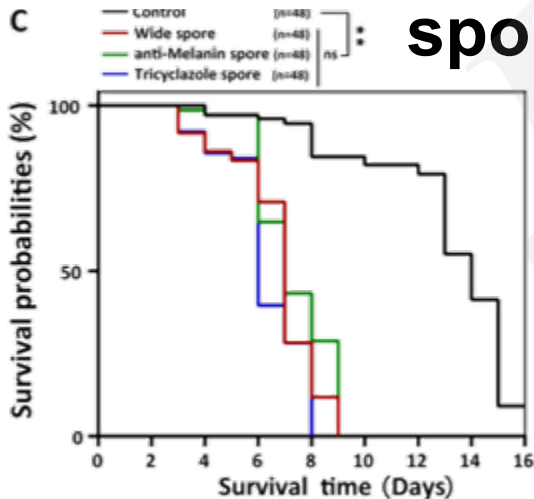
Key words: Melanin; Molecular structure; Antioxidant activity; Subcellular localization; *Ascosphaera apis*

Research Summary

This paper mainly focused on isolate and identify melanin from the pathogenic fungus *Ascosphaera apis*, and summarized its physicochemical properties, molecular structure, antioxidant activity, and biological function.



- A eumelanin with a typical indole structure.
- Located on the spore wall
- Strong antioxidant activity
- Chelate to metal ions
- Can not enhance the virulence of spores

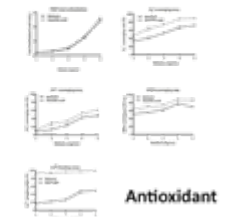
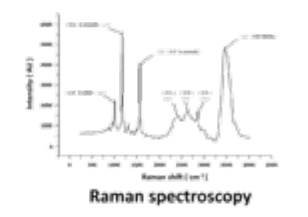
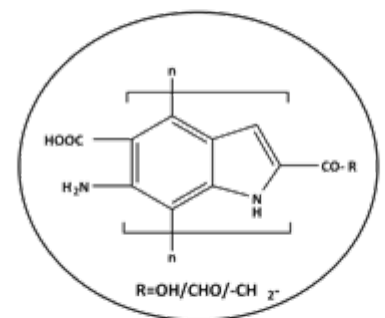
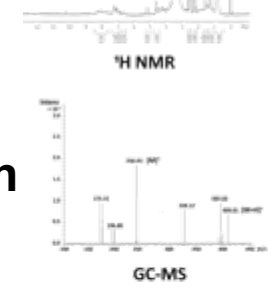
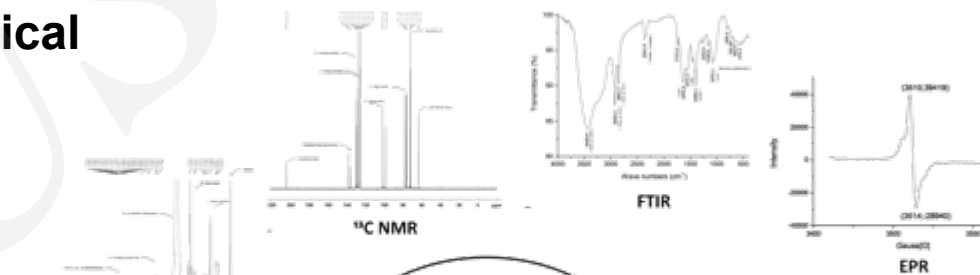
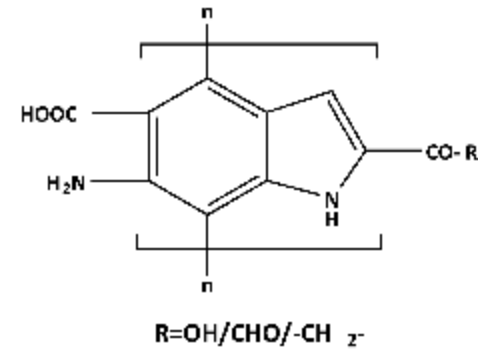


Innovation points

- **First time** to isolate and identify melanin produced by the pathogenic fungus *Ascospaera apis*.

- **Summary** of the physicochemical properties, molecular structure, antioxidant activity, and biological function of melanin.

- **Established** a procedural method for systematic identification of fungal melanin.



Innovation points

A series of comprehensive figures were generated to summarize the latest knowledge about *Ascosphaera apis* melanin.

Figure 1 | Electron paramagnetic resonance spectroscopy analysis of melanin.

Figure 2 | Raman spectrum of melanin.

Figure 3 | ^1H and ^{13}C NMR spectra of melanin.

Figure 4 | Antioxidant activities of melanin.

Figure 5 | Subcellular localization of melanin.