



## PERSPECTIVE

# The misuse of artificial intelligence in mycological manuscripts: An editorial perspective

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### Abstract

The integration of Artificial Intelligence (AI) tools, particularly Large Language Models, into the preparation of mycology manuscripts presents both opportunities and significant ethical challenges. As of 2025, their misuse has become an escalating concern, prompting new guidelines from scholarly bodies. Common issues observed in submitted manuscripts include the generation of fabricated references, the perpetuation of outdated taxonomic classifications, inconsistent grammar, and a notable lack of critical authorial synthesis. This paper argues that while AI is a valuable assistant, its use must be governed by rigorous scholarly judgment, ethical transparency, and

meticulous verification of all generated content to uphold academic integrity.

**Keywords:** Academic Integrity, AI, Authorship, COPE, Ethics, Mycology, Plagiarism, Taxonomy

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### 1. Artificial Intelligence: A double-edged sword

As Editor-in-Chief of MycoAsia Journal of Modern Mycology and a co-editor of several scholarly volumes, I have witnessed the rapid and often uncritical integration of Artificial Intelligence (AI) into scientific writing. Over the past year, the embracing of tools such as ChatGPT, Google Gemini, Perplexity, Sourcely has accelerated, moving from research aids to *de facto* content generators. The potential of AI to help manage the modern information explosion is undeniable; however, this growing reliance demands a more urgent conversation about its responsible and transparent use (Cheng et al., 2025). I continue to review numerous mycology manuscripts where the line between AI as a tool and AI as a ghostwriter has become dangerously blurred, threatening the very foundation of scholarly communication.

### 2. Fabricated references and missing critical synthesis

The most alarming issue remains the inclusion of AI-generated text that lacks original thought. Many passages read as mere compilations of existing literature rather than a critical engagement with the subject. This

problem is compounded by AI "hallucination", which results in fabricated references or non-functional DOIs that authors fail to verify. In such manuscripts, the author's unique voice is often missing, replaced by a generic and disengaged tone that lacks intellectual authority.

### 3. Taxonomic pitfalls in AI-generated text

Taxonomic inaccuracies continue to be a widespread problem. While taxonomic expertise is not expected of all biologists, AI tools trained on outdated web data often perpetuate and confidently present obsolete classifications. I frequently encounter the use of defunct terms like *Deuteromycotina*, *Deuteromycota*, or the class *Hyphomycetes*, and even the fundamental misclassification of fungi under *Oomycota*. AI can also introduce redundant taxonomic descriptions, for example, "extracted from the fungus *Torrubiella* sp., genus *Torrubiella*, family Cordycipitaceae, order Hypocreales," which is unwarranted in formal writing.

### 4. Stylistic flaws and superficial arguments

Numerous grammatical and stylistic issues are frequently exacerbated by AI. Errors such as the

confusion between singular and plural forms (e.g., "species"), incorrect pronoun use for acronyms (e.g., Entomopathogenic fungi or EPF as singular), and basic punctuation mistakes (e.g., "leave's"), are typical of unedited AI output. The use of inappropriate synonyms chosen for lexical variety rather than contextual accuracy is another hallmark.

Sentence construction in AI-dependent manuscripts is often weak. Vague generalizations like "Several studies have proven..." are presented without a single citation. Similarly, many review articles devolve into a series of paraphrased paragraphs without providing any new interpretation, approaching the threshold of academic dishonesty. Their conclusion sections are often repetitive summaries, lacking the critical synthesis expected of scholarly work.

### 5. The path forward: Detection and authorial responsibility

Identifying AI-assisted writing requires increasing vigilance. Journals are now moving beyond basic plagiarism software to adopt more sophisticated stylometric analysis and semantic consistency checkers, which can flag deviations from an author's previous work. However, these tools are not foolproof.

Ultimately, the responsibility lies with the author. The convenience of AI cannot justify the relinquishment of scholarly diligence. This authorial duty is now being codified by leading academic bodies, with organizations like the Committee on Publication Ethics (COPE) issuing updated guidelines specifically addressing AI-assisted writing (<https://publicationethics.org/>).

### 6. Recommendations for responsible use

Despite these challenges, a blanket rejection of AI tools is counterproductive. When used judiciously, they are powerful aids for improving structure and clarity (Cheng et al., 2025). To navigate this new landscape, the mycological community could embrace the following practices:

1. **Build original thought first:** Develop your core concepts, arguments, and structure independently. Use AI to refine and polish your writing, not to generate foundational ideas.
2. **Verify everything:** Treat all AI-generated content, especially facts, figures, and citations, as unverified claims. Cross-check every reference using trusted academic databases.
3. **Maintain your voice:** Edit AI-generated text extensively to ensure it reflects your unique analytical perspective. Rewrite awkward phrasing, remove redundancies, and correct stylistic inconsistencies.

4. **Uphold transparency:** Adhere strictly to journal policies regarding AI. Disclose the use of AI tools in your manuscript as required, ensuring transparency in your writing process.
5. **Engage in rigorous peer review:** As reviewers, be vigilant for the hallmarks of uncritical AI use. Provide constructive feedback that pushes authors to engage more deeply with their sources and present true scholarly synthesis.

### 7. Conclusion

By treating AI as a co-pilot rather than an autopilot, the mycology community can harness its benefits while safeguarding the principles of originality, accuracy, and intellectual integrity. This is not just an author's responsibility but a collective duty shared by editors, reviewers, and institutions to preserve the credibility that underpins all scientific research.

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