# Article information:

Cu Single Atom Nanozyme Based High‐Efficiency Mild Photothermal Therapy through Cellular Metabolic Regulation - Chang - 2022 - Angewandte Chemie International Edition - Wiley Online Library
<https://onlinelibrary.wiley.com/doi/full/10.1002/anie.202209245>

# Article summary:

1. ATP concentration in tumor microenvironment is much higher than normal tissues, and reducing ATP can cut off the energy supply of cancer cells, leading to decreased survivability.

2. Mild photothermal therapy (PTT) can be achieved by downregulating heat shock proteins (HSPs), which can be done by blocking the energy supply source to reduce HSP production.

3. Licogliflozin (LIK066), a clinically approved hypoglycemic drug, can significantly reduce cellular glucose uptake by disabling SGLT1/2 pathways, which is a promising strategy to improve mild PTT by blocking the energy supply of HSP production.

# Article rating:

Appears strongly imbalanced: The article is written in a biased or one-sided way, and the information it provides is not trustworthy enough to be considered a reliable source. You should consult other sources to find reliable information on the presented issues.

# Article analysis:

该文章主要介绍了一种基于Cu单原子纳米酶的高效温和光热疗法，通过调节细胞代谢来降低ATP浓度，从而减少癌细胞的生存能力。然而，该文章存在以下问题：

1. 偏见来源：该文章没有提及其他可能影响ATP浓度的因素，如肿瘤微环境中的氧气浓度、pH值等。这些因素也可能对肿瘤细胞的代谢产生影响。

2. 片面报道：该文章只关注了ATP在肿瘤细胞中的作用，但并未探讨其在正常细胞中的作用。这可能导致读者对ATP功能的理解不够全面。

3. 无根据主张：该文章声称通过降低ATP浓度可以减少癌细胞的生存能力，但并未提供足够的实验证据来支持这一主张。

4. 缺失考虑点：该文章没有考虑到光热治疗可能会对周围健康组织造成损伤，并未探讨如何避免这种损伤。

5. 主张缺失证据：该文章声称阻断HSPs生成是改善温和光热疗法的一种有效策略，但并未提供足够的实验证据来支持这一主张。

6. 未探索反驳：该文章没有探讨可能存在的反驳意见或争议点，导致读者无法全面了解该技术的优缺点。

7. 宣传内容：该文章过于强调该技术的优势，而忽略了其潜在风险和限制。这可能会误导读者对该技术的理解和应用。

综上所述，该文章存在多个问题，需要更加客观、全面地呈现相关信息。

# Topics for further research:

* Other factors affecting ATP concentration in cancer cells
* ATP function in normal cells
* Lack of evidence supporting the claim that reducing ATP concentration reduces cancer cell survival
* Potential damage to surrounding healthy tissue from photothermal therapy
* Insufficient evidence supporting the claim that blocking HSPs is an effective strategy for improving mild photothermal therapy
* Unexplored counterarguments or controversies
* Overemphasis on the advantages of the technology without acknowledging potential risks and limitations

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