# Article information:

Computational study of synthetic and natural polymer additives — Antioxidant potential of BHA, TBHQ, BHT, and curcumin - ScienceDirect  
<https://www.sciencedirect.com.remotexs.ntu.edu.sg/science/article/pii/S0141391022001616>

# Article summary:

1. The antioxidant potential of four commonly used synthetic and natural additives (BHT, BHA, TBHQ, and curcumin) have been compared by calculating bond dissociation enthalpy (BDE), ionization potential (IP), proton dissociation enthalpy (PDE), proton affinity (PA), and electron transfer enthalpy (ETE) values.

2. The ranking of the species based on their antioxidant potential is BHT > BHA ≈ TBHQ > curcumin A > curcumin D.

3. All studied additives are potentially applicable to protect polymeric materials from oxidation.

# Article rating:

May be slightly imbalanced: The article presents the information in a generally reliable way, but there are minor points of consideration that could be explored further or claims that are not fully backed by appropriate evidence. Some perspectives may also be omitted, and you are encouraged to use the research topics section to explore the topic further.

# Article analysis:

The article provides a comprehensive overview of the antioxidant potential of four commonly used synthetic and natural additives - BHT, BHA, TBHQ, and curcumin - by comparing their bond dissociation enthalpy (BDE), ionization potential (IP), proton dissociation enthalpy (PDE), proton affinity (PA), and electron transfer enthalpy (ETE) values. The article is well-structured and provides a detailed description of the methods used to calculate these values as well as the results obtained from them.

The article is reliable in terms of its content as it cites relevant sources for each claim made throughout the text. Furthermore, it presents both sides of the argument equally by providing evidence for both positive and negative effects associated with each additive studied. Additionally, it acknowledges possible risks associated with using these additives in polymeric materials such as toxicity or mutagenicity.

However, there are some points that could be improved upon in order to make the article more trustworthy and reliable. For example, while the article does provide evidence for both positive and negative effects associated with each additive studied, it does not explore any counterarguments or alternative explanations for these effects which could be beneficial in providing a more balanced view on the topic discussed in the article. Additionally, while the article does acknowledge possible risks associated with using these additives in polymeric materials such as toxicity or mutagenicity, it does not provide any evidence to support this claim which could be beneficial in further strengthening its reliability.

# Topics for further research:

* Antioxidant potential of synthetic additives
* Bond dissociation enthalpy of natural additives
* Ionization potential of BHT and BHA
* Proton dissociation enthalpy of TBHQ
* Proton affinity of curcumin
* Risks associated with using synthetic additives in polymeric materials

# Report location:

<https://www.fullpicture.app/item/db374805c07b406113b774cf4476bcc0>