

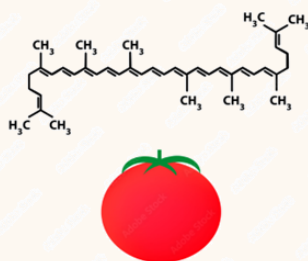
Eco-friendly Way to Get Lycopene from Tomato Peels Using Veggie Oil

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Naphaphan Kunthakudee, Boonta Chutvirasakul, Prakorn Ramakul. Green extraction of lycopene from tomato peel waste using vegetable oil. AIP Conf. Proc. 2669, 030014 (2023)
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Lycopene



What Is Lycopene?

- **Lycopene** is a powerful antioxidant found in red-colored fruits and vegetables, especially tomatoes. It's known for its health benefits, including potential protection against cancer and heart diseases.

What Did the Study Investigate?

- The researchers focused on finding a way to extract lycopene from tomato peel waste in an environmentally friendly manner.

How Did They do it and What Were the Results?

- **Find the best oil:** The researchers tested various oils like sunflower oil, soybean oil, olive oil, coconut oil, and palm oil to see which one worked best as a solvent for extracting lycopene from the tomato peels. They found that **sunflower oil** worked the best
- **Optimization:** Researcher used a statistical method called a **Box-Behnken design** to figure out the best conditions for the extraction process. They looked at factors like **the ratio of solvent** (sunflower oil) to tomato peel, **the size** of the tomato peel pieces, **the concentration** of ethanol used, and **how long** the extraction process took.
- **Optimal conditions:** After analyzing the data, they found the best conditions for extracting lycopene: using 40 mL of solvent per gram of dry peel, having a tomato peel particle size of 0.3 mm, using an ethanol concentration of 56%, and letting the extraction process run for 90 minutes. This combination resulted in **the highest yield of lycopene**, which was 4.41 mg per gram of dry peel.
- **Purity analysis:** They also checked the purity of the extracted lycopene using a method called HPLC (High-Performance Liquid Chromatography), and found it to be quite high, at 94%

Conclusion:

- They figured out the best way to extract a valuable compound called lycopene from tomato peels by using sunflower oil as a solvent and optimizing various factors like the amount of solvent used, the size of the tomato peel pieces, and how long the extraction process took.