

## Producing Lutein Powder from Algae by Extraction and Drying

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**Abstract :** Lutein is a type of carotene believed to be beneficial to the eyes. This study aims to explore the possibility of using a closed cycle spray drying system to produce lutein. The system contains a spray dryer, a condenser, a heater, and a pressure seal. Hexane, ethanol, and isopropanol will be used as organic solvents to compare the extraction effects. Several physical and chemical methods of cell disruption will be compared. By continuously sweeping the system with nitrogen, the oxygen content will be controlled below 2%, reducing the concentration of organic solvent below the explosion limit and preventing lutein from being oxidized. Lutein powder will be recovered in the collection device. The volatile organic solvent will be cooled in the condenser and deposited in the bottom until it is discharged from the bottom of the condenser.

**Keywords :** closed cycle spray drying system, *Chlorella vulgaris*, organic solvent, solvent recovery

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