

生物化学工程与技术

## 微波场对小麦淀粉性质的影响

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摘要

研究了微波辐射前后小麦淀粉物化性质的变化。采用微波对水分含量30%的小麦淀粉进行处理。结果表明微波处理淀粉颗粒表面出现小孔,微波处理增强了对应X射线衍射峰的强度,降低了膨胀度、溶解度、析水率以及焓值,提高了糊化转变温度、转变温度范围。小麦淀粉经处理后糊化起始温度升高、黏度降低,但其黏度曲线不改变。以上数据表明在淀粉颗粒内无定形区和结晶区的直链淀粉与直链淀粉、直链淀粉与支链淀粉发生交互作用,产生了新的不同稳定性的结晶体,从而导致微波处理淀粉内部更加有序的结晶排列。

关键词 [微波辐射](#) [小麦淀粉](#) [性质](#)

分类号

## Effect of microwave irradiation on properties of wheat starches

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### Abstract

The change of physicochemical properties of wheat starches was studied after microwave irradiation. Wheat starches were treated at a moisture content of 30% by microwave irradiation. The results showed that the surface was porous and a concavity could be clearly observed at the center of starches. Microwave treatment increased the X-ray intensities of the major d-spacings of starches. The swelling power, solubility, syneresis and the enthalpy of gelatinization decreased on this treatment. Microwave treatment increased the gelatinization transition temperatures and the gelatinization temperature range of starches. The rise in pasting temperature and the drop in viscosity of wheat starches were observed after microwave irradiation. However, the viscosity patterns remained unchanged. Associations involving starch chains (amylose-amylose and amylose-amylopectin) with the amorphous and crystalline regions of the granule resulted in the formation of new crystallites of different stabilities and led to more ordered crystalline array.

### Key words

[microwave irradiation](#) [wheat starch](#) [properties](#)

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