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**New insights into the enhanced performance of high solid anaerobic digestion with dewatered sludge by thermal hydrolysis: organic matter degradation and methanogenic pathways**

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**Highlights**

1. The degradation of organic components was improved by THP at different rates.
2. No enhancement of the final degradation extent of organic components was observed.
3. Thermal hydrolysis enriched the genes in amino acid and carbohydrate metabolism.
4. The methanogenic pathway in anaerobic digester shifted after thermal hydrolysis.
5. Shifted methanogenic pathway was verified by the enhanced methane content.

**Abstract**

Two lab-scale high solid anaerobic digesters fed with untreated sludge (R1) and thermally hydrolyzed sludge (R2) were operated to investigate the influence of thermal hydrolysis pretreatment (THP) on the degradation of individual macromolecular organic components

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