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Abstract: Co-digestion of residual sludge (RS) and different lignocellulosic wastes (LWs) including greening waste (GW), decocted Chinese herbs waste (DCHW) and sugarcane bagasse waste (SCBW) was investigated in batch digester. Results show that the application of GW presented the highest specific methane yield (161 mL CH_4/g VS_{added}) due to its high carbohydrate fraction and more balanced C/N ratio in co-substrate mixture. Buswell equation was applied and it is found that biodegradability index (BI) for co-digestion varied from 68.1% to 74.2% (53.0% for RS mono-digestion) depending on the lignin fractions of the LWs. Variation of pH, VFAs, alkalinity and ammonia throughout the digestion were also examined. The addition of LWs induced VFAs formation, as well as their conversion to methane. The higher microbial diversity in RS/LWs co-digestion further confirmed the positive effect of LWs addition in co-digestion.

Key words: Anaerobic co-digestion, Residual sludge, Different lignocellulosic wastes, Methane production, Digestion performance

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