

Figure S1: Activities of key carbohydrate metabolism enzymes in the leaves of *Phragmites australis* under control (CK) and melatonin (MT) conditions. Ald, aldolase; UGPase, UDP-glucose pyrophosphorylase; Susy, sucrose synthase; AGPase, ADP-glucose pyrophosphorylase; HXK, hexokinase; PGI, phosphoglucomutase; G6PDH, glucose-6-phosphate dehydrogenase; PFK, phosphofructokinase; PGM, phosphoglucomutase; FK, fructokinase; vacInv, vacuolar invertase; cytlInv, cytoplasmic invertase; cwInv, cell wall invertase. ns indicates not significant and “*” indicates significance at $p < 0.05$. Data are expressed as means \pm SE ($n = 3$).

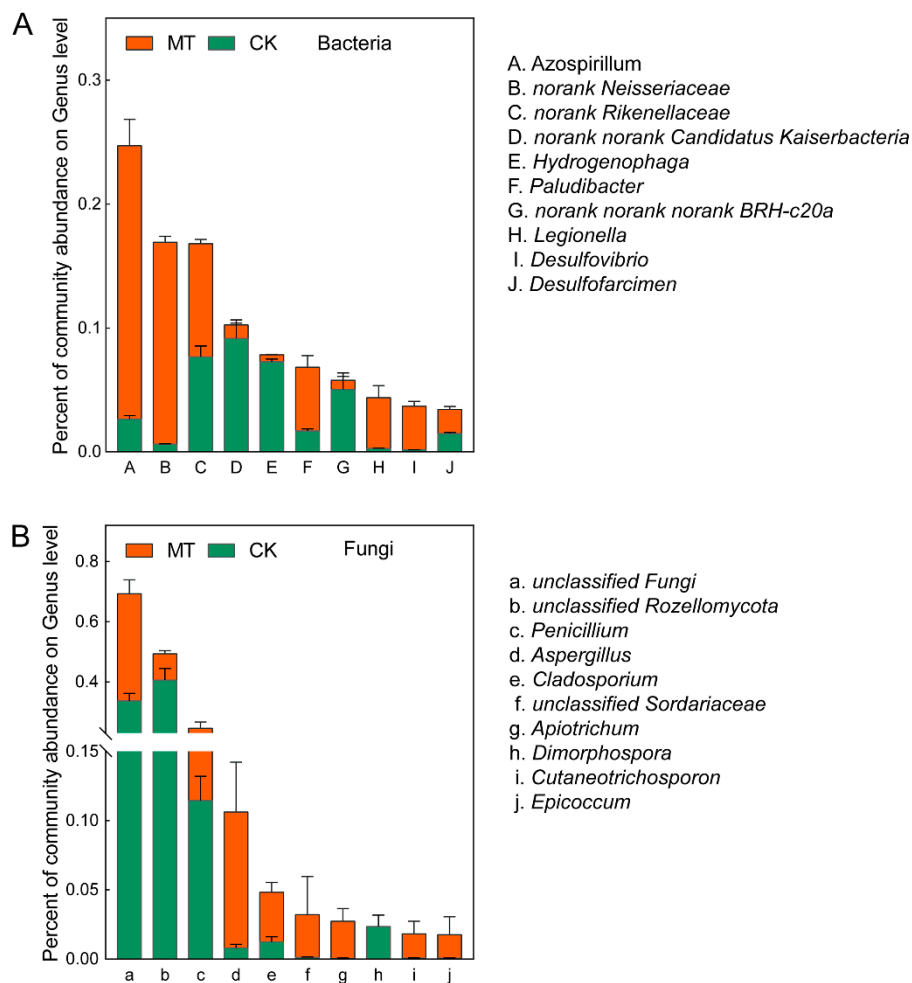


Figure S2: Changes in the relative abundance of bacteria (A) and fungi (B) after treatment for 7 days under control (CK) and melatonin (MT) conditions in wastewater at the genus level. Data are expressed as means \pm SE ($n = 3$).

Table S1: Mantel test based on the unweighted-unifrac distance between the microbial community at genus level in CWs and pollutant contents in the effluent.

Mantel test	<i>r</i>	p-value	Number of permutations	Tail type
Bacteria	0.62806	0.012	999	two-side
Fungi	0.65328	0.011	999	two-side