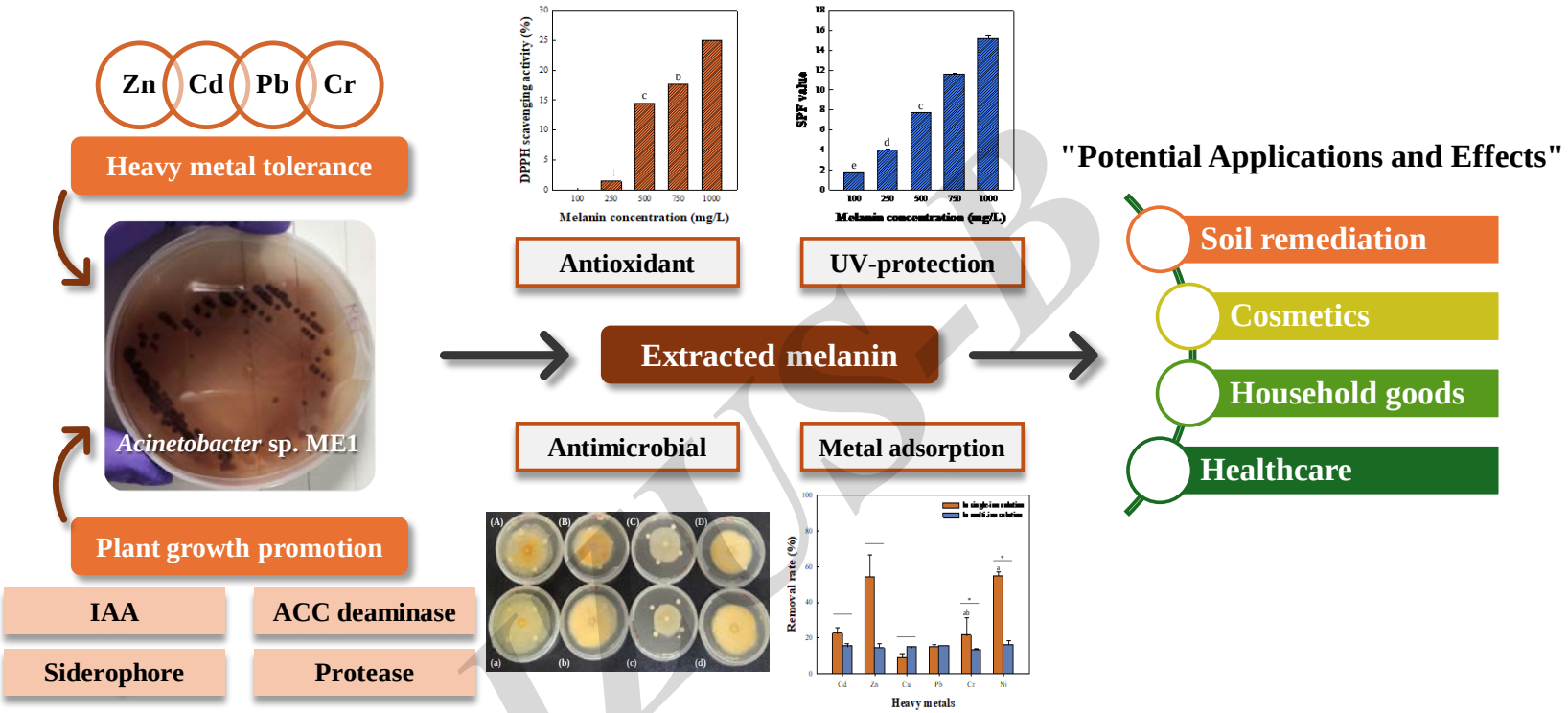
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Acinetobacter sp. ME1: a multifunctional bacterium for phytoremediation utilizing melanin production, heavy metal tolerance, and plant growth promotion

Key words: *Acinetobacter*; Melanin; Heavy metal tolerance; Plant growth promotion; Multi-function

Research Summary



- Melanin-producing *Acinetobacter* sp. ME1 was isolated.
- ME1 showed resilience to high concentrations of Zn, Cd, and Pb.
- ME1 had various traits for plant growth and antioxidant properties.
- ME1-extracted melanin showed significant adsorption capacity for Zn and Ni.
- *Acinetobacter* sp. ME1 is a promising candidate for phytoremediation.

Innovation points

Characterization

• Introduction:

The study explores multifunctional bacteria for phytoremediation, focusing on *Acinetobacter* sp. ME1, a melanin-producing bacterium with heavy metal tolerance and plant growth-promoting traits.

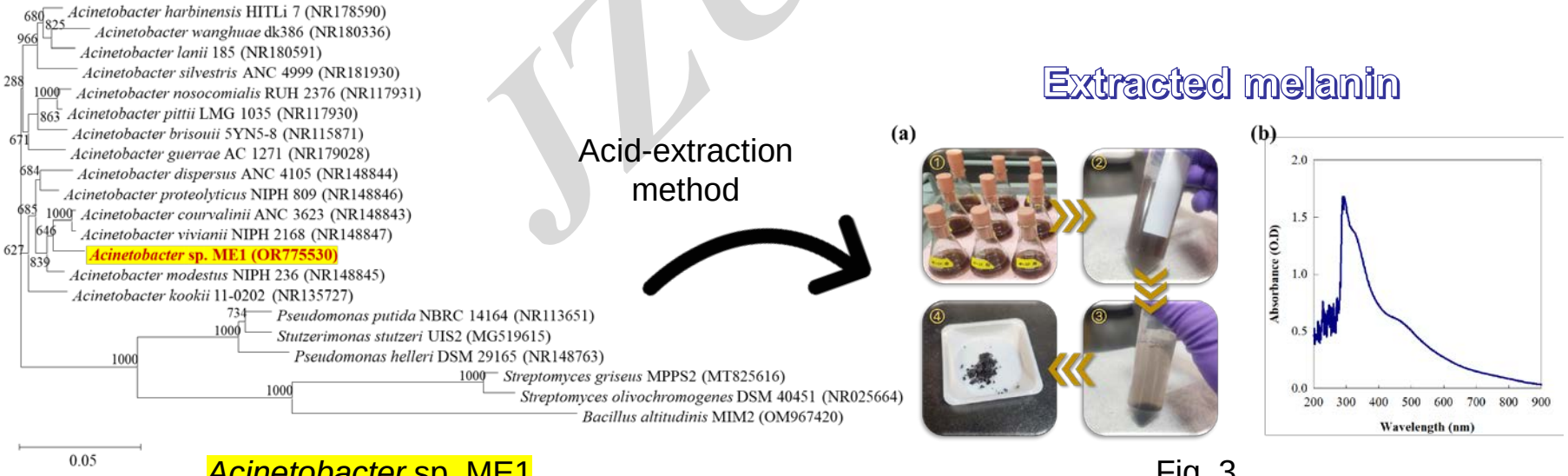
• Summary:

Acinetobacter sp. ME1 exhibited excellent heavy metal resistance, plant growth-promoting properties, and its melanin showed UV-blocking, antioxidant, heavy metal adsorption, and antimicrobial properties.

• Emphasis:

ME1 demonstrated multifunctional capabilities, its extracted melanin showed potential applications in various industries, and further research is needed on ME1's genes and field trials for phytoremediation validation.

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Acinetobacter sp. ME1

Fig. 3

Innovation points

Application

Comprehensive table and figure were generated to summarize the phytoremediation potential of on *Acinetobacter* sp. ME1.

Removal efficiency (%) of Cr, Zn, Cd and Pb by *Acinetobacter* sp. ME1 in the hydroponics cultivation

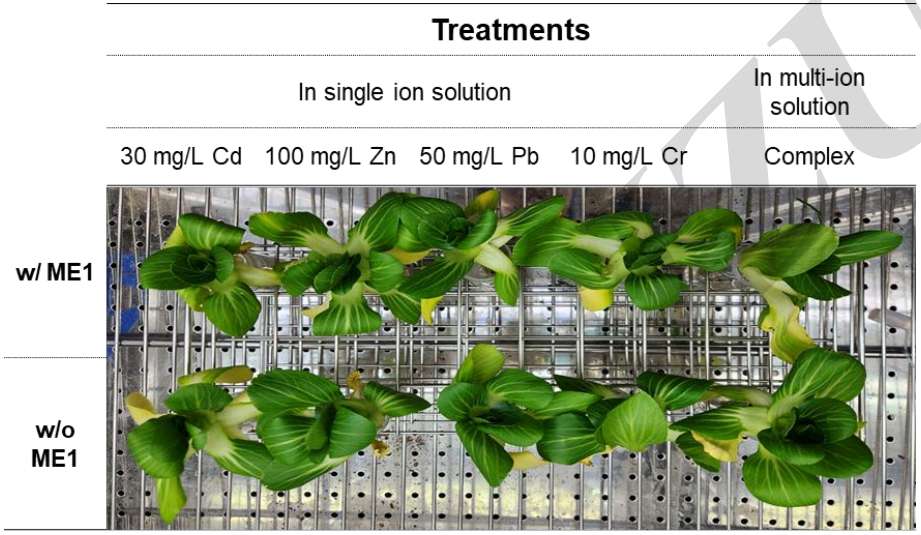


Fig. S5c

Table 4

Heavy metal		Treatments	
		w/ ME1[a]	w/o ME1
In single ion solution	Cd	83.7±0.5[a*]	78.9±0.3[b]
	Zn	40.6±1.0[a]	14.6±1.0[b]
	Pb	95.2±0.1[a]	85.0±0.2[b]
	Cr	56.8±0.5[a]	45.3±0.2[b]
In multi-ion solution	Cd	32.2±2.4[a]	21.4±1.6[b]
	Zn	28.5±0.3[a]	14.3±1.4[b]
	Pb	94.9±0.1[a]	88.6±0.2[b]
	Cr	60.8±0.8[a]	32.3±1.2[b]

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