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SUPPLEMENTARY DATA

Signaling pathways of alternative oxidase genes expression in plants

E.V. Garmash [a, *]

[a] *Institute of Biology, Komi Scientific Center, Ural Branch, Russian Academy of Sciences, Syktyvkar*

Corresponding author: E. V. Garmash

*e-mail: *garmash@ib.komisc.ru*

Supplementary Table S1. Literature survey on the response of the alternative respiratory pathway (AP) of plants to changes in environmental conditions. AOX – alternative oxidase, v_{alt} – AP activity *in vivo*, V_{alt} – AP capacity, CRR – cyanide-resistant respiration. HL – high light, PEG – polyethylene glycol, SA – salicylic acid. A dash denotes the lack of information about the amount of AOX protein, its activity/capacity.

Species	Tissue	Stress, growth conditions	Gene expression	AOX protein amount	Activity/ Capacity v_{alt}/V_{alt} or CRR	Reference
Arabidopsis thaliana (wild type)	Leaves	HL, 400 μmol/(m^2 s) (8 h)	*AOX1a* ↑ *AOX1c* ↓	↑	–	[51]
		HL + 3000 ppm CO_2 (8 h)	*AOX1a* ↑ *AOX1c* ↓	↑	–	
		Antimycin , 5 μM (4 h)	*AOX1a* ↑	–	–	
	Leaves	HL, 100 μmol/(m^2 s) (5 d after darkness) HL, 1000 μmol/(m^2 s) (2 h after 100 μmol/(m^2 s))	*AOX1a-d* ↑ *AOX2* ↑ (*AOX1a* stronger than other *AOX* genes)	–	V_{alt} ↑	[31]
	Leaves	HL, 400 μmol/(m^2 s) (8 h)	*AOX1a* ↑ *AOX1c* ↑ *AOX2* ↑	↑	–	[36]
	Leaves	UV-B, 1.4 kJ/m^2 per day (7 d)	*AOX1a-d* ↑	↑	V_{alt} ↑	[35]
	Roots	Hypoxia, 1% O_2 (3 weeks)	*AOX1a* ↑	↑	V_{alt} ↑	[50]
	Leaves Roots	NaCl, 150 mM (7 d)	*AOX1a* ↑	↑	V_{alt} ↑	[48]
	Shoots Roots	N deficiency, 0.5, 0.1 mM KNO_3 (7 d)	*AOX1a-d* ↑ *AOX2* ↑ (*AOX1a* stronger than	–	CRR ↑	[56]

			other *AOX* genes)			
	Leaves Roots	$CdSO_4$, 5 and 10 μM (up to 72 h)	*AOX1a, d* ↑ *AOX1a* ↑	↑ (after 24 h) ↑ (after 4 h)	–	[54]
Nicotiana tabacum	Leaves	Drought (10 d) Drought (6 d) + HL, 700 μmol/(m^2 s) (up to 4 d)	*AOX1a* ↑ (especially under drought + HL)	↑	Increase in total respiratory activity	[49]
	Leaves	O_3, 250 nl/l (fumigation, 5 h) (observation within 24 hours after fumigation)	*AOX1a* ↑ (after 5-10 h) *AOX1a*↓ (after 24 h)	↑ (after 5-10 h) ↓(after 24 h)	↑ (after 5–10 h) ↓ (after 24 h)	[55]
	Aluminum tolerant cell line	$AlCl_3$, 50 μM (18 h)	*AOX1* ↑	↑	V_{alt} ↑	[53]
Nicotiana sylvestris	Leaves	Age-related changes	*AOX1* ↑ (before bolting)	–	v_{alt} ↑	[100]
Oryza sativa	Leaves	Greening	*AOX1c* ↑	–	V_{alt}↑	[44]
Glycine max	Coty-ledons	Greening	*AOX2a* ↑ *AOX2b* ↓	No change	v_{alt} ↑	[72, 77]
	Coty-ledons	SA, 1mM (24 h)	*AOX1*↑ *AOX2b*↑	↑	V_{alt} ↑	[58]
Triticum aestivum var. Irgina	Leaves	Greening	*AOX1a* ↑	No change	V_{alt} ↑	[32]
Triticum aestivum var. Irkutskaya	Etiolated seedlings	Low temperature, 2°C (7 d)	*AOX1c* ↑ (in the first 5 days)	↑	V_{alt} ↑	[47]
Triticum	Leaves	Low temperature, 4°C (10 d)	*AOX1a* ↑		V_{alt} ↑	[46]

aestivum (cold tolerant variety M808)			*AOX1c* ↑ (less than *AOX1a*)	↑		
Cucumis sativum	Leaves	Stresses: HL, 1000 µmol/(m^2 s); PEG, 18% m/v; 4°C (3 d)	*CsAOX* ↑	↑	V_{alt} ↑	[52]