

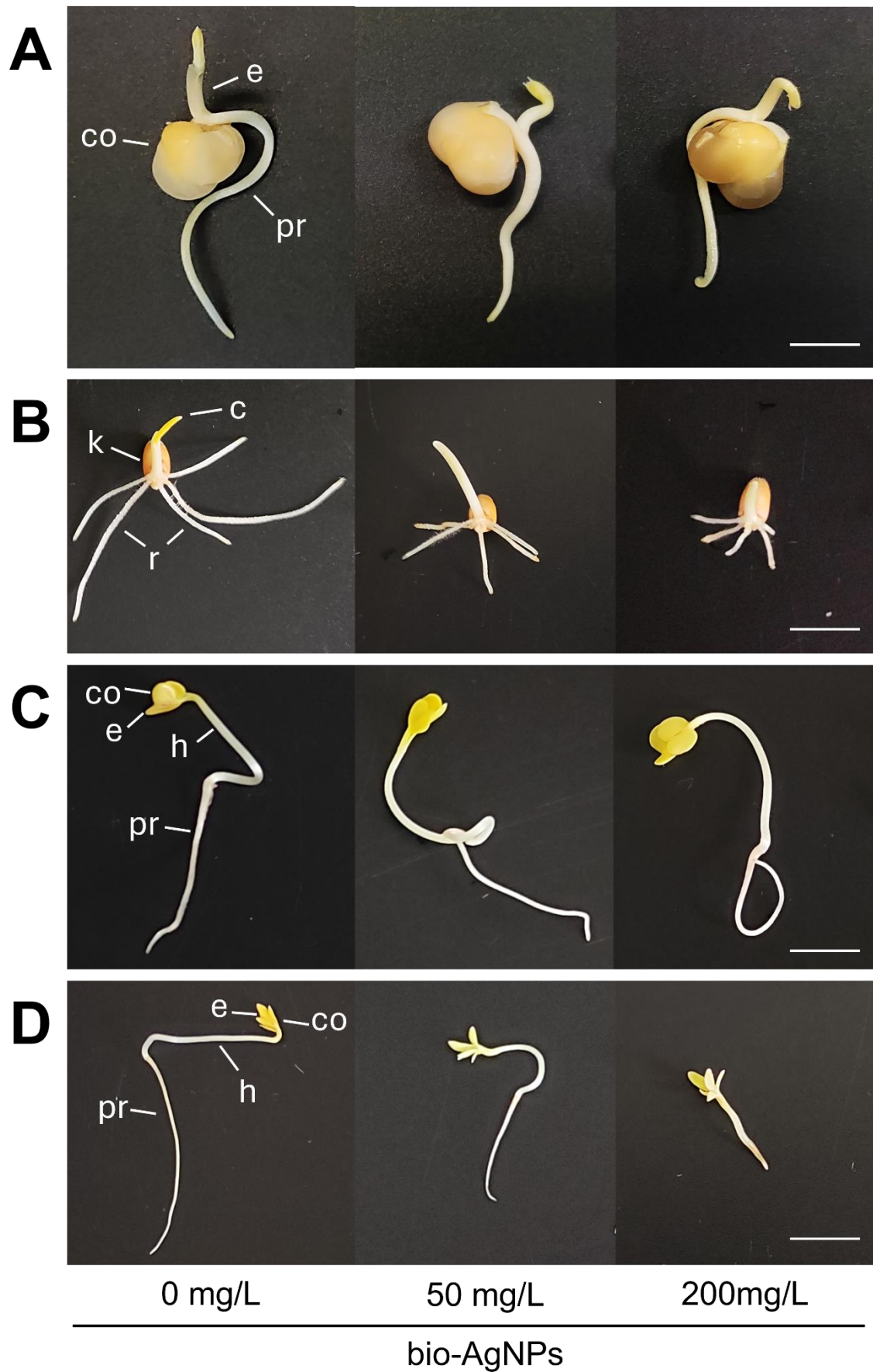


Figure S1. The 4-day-old seedlings of (A) pea (*Pisum sativum* L.), (B) wheat (*Triticum aestivum* L.), (C) radish (*Raphanus sativus* L.) and (D) cress (*Lepidium sativum* L.) developed in suspension of bio-AgNPs at concentrations of 0, 50 and 200 mg/L. Horizontal scale bars equal 10 mm. Abbreviations: c – coleoptile; e – epicotyl; h – hypocotyl; r – root; pr – primary root; co – cotyledons; k – kernel.

Table S1. Fresh weight (FW) and length of 4-day-old seedlings of pea (*Pisum sativum* L.) cv. Tarchalska and cv. Sześciotygodniowy and wheat (*Triticum aestivum* L. cv. Ostka Smolicka) developed in suspension of bio-AgNPs at concentrations of 0, 50 and 200 mg/L. Means of 3 replicates $\pm$ SD. The same letters indicate statistically insignificant ($p \leq 0.05$) differences (valid separately for data in rows) based on ANOVA analysis and Tukey's post-hoc test.

			bio-AgNPs		
			0 mg/L	50 mg/L	200 mg/L
Pea (<i>Pisum sativum</i> L.) cv. Tarchalska	FW (mg)	Root	37.1 $\pm$ 2.4 ^a	59.3 $\pm$ 25.2 ^a	47.7 $\pm$ 12.6 ^a
		Epicotyl	34.1 $\pm$ 0.6 ^a	37.8 $\pm$ 0.7 ^a	36.0 $\pm$ 2.6 ^a
		Cotyledons	242.6 $\pm$ 5.9 ^a	259.1 $\pm$ 14.6 ^a	251.1 $\pm$ 18.0 ^a
	Length (mm)	Root	23.2 $\pm$ 0.6 ^a	27.6 $\pm$ 3.9 ^a	31.1 $\pm$ 5.1 ^a
		Epicotyl	5.5 $\pm$ 0.0 ^a	6.9 $\pm$ 1.0 ^a	7.1 $\pm$ 1.5 ^a
Pea (<i>Pisum sativum</i> L.) cv. Sześciotygodniowy	FW (mg)	Root	49.3 $\pm$ 13.7 ^a	58.1 $\pm$ 22.4 ^a	52.1 $\pm$ 14.1 ^a
		Epicotyl	43.1 $\pm$ 4.8 ^a	35.1 $\pm$ 7.2 ^a	40.0 $\pm$ 4.7 ^a
		Cotyledons	224.8 $\pm$ 21.0 ^a	232.7 $\pm$ 27.8 ^a	231.0 $\pm$ 7.6 ^a
	Length (mm)	Root	25.4 $\pm$ 3.0 ^a	31.5 $\pm$ 10.9 ^a	33.9 $\pm$ 5.0 ^a
		Epicotyl	11.1 $\pm$ 3.6 ^a	10.3 $\pm$ 4.5 ^a	10.0 $\pm$ 2.1 ^a
Wheat <i>Triticum aestivum</i> L. cv. Ostka Smolicka	FW (mg)	Seedling	43.7 $\pm$ 4.8 ^a	36.7 ^{ab} $\pm$ 2.4	33.6 ^b $\pm$ 2.5
	Length (mm)	Root*	26.6 $\pm$ 5.0 ^a	17.1 $\pm$ 1.7 ^b	13.4 $\pm$ 0.6 ^b
		Coleoptile	13.3 $\pm$ 2.0 ^a	11.8 $\pm$ 1.4 ^a	9.5 $\pm$ 1.5 ^a

* - length of the primary root

Table S2. Seedlings' fresh weight (FW) and length of root and coleoptile/hypocotyl of 4-day-old seedlings of radish (*Raphanus sativus* L.) and cress (*Lepidium sativum* L.) developed in suspension of bio-AgNPs at concentrations of 0, 25, 50, 75, 100, 150 and 200 mg/L. Means of 3 replicates $\pm$ SD. The same letters indicate statistically insignificant ($p \leq 0.05$) differences (valid separately for data in columns and separately for each species) based on ANOVA analysis and Tukey's post-hoc test.

		FW (mg)		Length (mm)	
bio-AgNPs concentration (mg/L)		Seedling	Root	Hypocotyl	Root + Hypocotyl
Radish <i>Raphanus sativus</i> L.	0	66.0 $\pm$ 8.7 ^{ab}	36.9 $\pm$ 3.6 ^{bc}	23.8 $\pm$ 1.4 ^b	60.7 $\pm$ 2.8 ^{bc}
	25	76.9 $\pm$ 16.5 ^{ab}	40.4 $\pm$ 2.7 ^{abc}	28.0 $\pm$ 2.2 ^{ab}	68.5 $\pm$ 4.9 ^{abc}
	50	83.7 $\pm$ 7.2 ^a	37.5 $\pm$ 6.2 ^{bc}	31.5 $\pm$ 3.4 ^a	69.0 $\pm$ 9.1 ^{abc}
	75	88.8 $\pm$ 13.4 ^a	49.5 $\pm$ 3.6 ^a	30.8 $\pm$ 1.3 ^{ab}	80.3 $\pm$ 4.9 ^a
	100	84.8 $\pm$ 8.0 ^a	41.5 $\pm$ 4.4 ^{ab}	32.3 $\pm$ 2.0 ^a	73.8 $\pm$ 6.3 ^{ab}
	150	68.0 $\pm$ 7.7 ^{ab}	29.5 $\pm$ 2.5 ^c	28.0 $\pm$ 4.5 ^{ab}	57.5 $\pm$ 5.2 ^c
	200	57.5 $\pm$ 5.8 ^b	17.6 $\pm$ 0.3 ^d	13.6 $\pm$ 1.0 ^c	31.2 $\pm$ 1.3 ^d
Cress <i>Lepidium sativum</i> L.	0	25.6 $\pm$ 0.6 ^a	31.3 $\pm$ 2.7 ^a	23.2 $\pm$ 2.6 ^a	54.5 $\pm$ 1.5 ^a
	25	23.0 $\pm$ 3.9 ^{ab}	26.5 $\pm$ 4.1 ^{ab}	17.9 $\pm$ 3.4 ^{abc}	44.4 $\pm$ 7.4 ^{ab}
	50	21.7 $\pm$ 2.0 ^{ab}	23.2 $\pm$ 2.3 ^{abc}	19.1 $\pm$ 2.5 ^{ab}	42.3 $\pm$ 4.6 ^{ab}
	75	18.2 $\pm$ 1.1 ^{abc}	24.2 $\pm$ 4.6 ^{ab}	15.8 $\pm$ 0.7 ^{bcd}	39.9 $\pm$ 1.3 ^{abc}
	100	19.3 $\pm$ 2.2 ^{abc}	19.5 $\pm$ 6.0 ^{bcd}	16.4 $\pm$ 2.6 ^{bcd}	36.0 $\pm$ 8.6 ^{bcd}
	150	16.4 $\pm$ 5.4 ^{bc}	13.5 $\pm$ 2.1 ^{cd}	12.2 $\pm$ 0.9 ^{cd}	25.7 $\pm$ 2.9 ^{cd}
	200	12.3 $\pm$ 3.4 ^c	12.3 $\pm$ 3.3 ^d	11.2 $\pm$ 1.5 ^d	23.6 $\pm$ 4.8 ^d

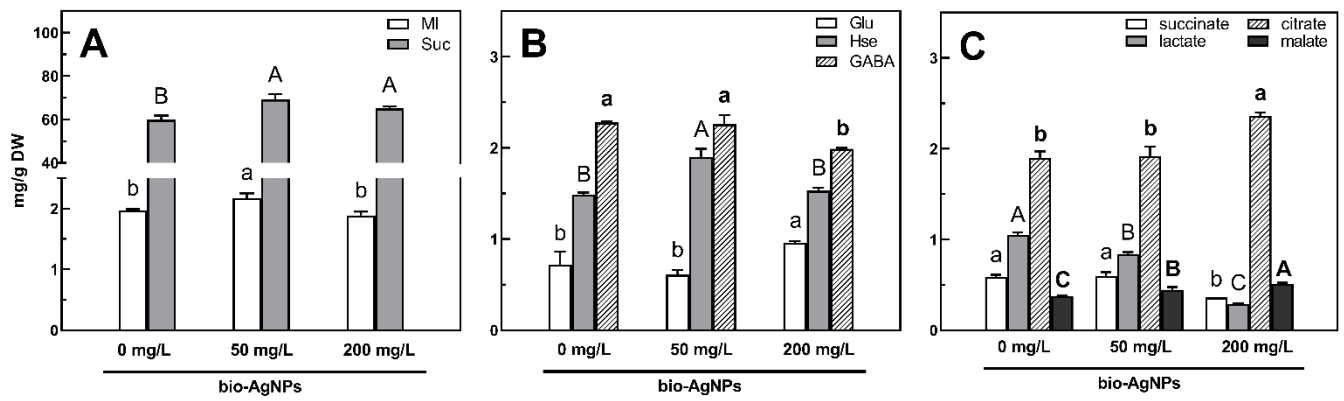


Figure S2. The concentrations of selected metabolites in the cotyledons (A–C) of 4-days-old pea (*Pisum sativum* L.) seedlings developed in suspension of bio-AgNPs at concentrations of 0, 50 and 200 mg/L. Values (in mg/g DW) are the means of 3 replicates + SD. The same letters (a–d; A–D; a–c; A–D; separately for each metabolite) above the bars indicate no statistically significant ($p \leq 0.05$) differences based on ANOVA and Tukey's post-hoc test. Abbreviations: MI – *myo*-inositol; Suc – sucrose; Glu – glutamic acid; Hse – homoserine; GABA – γ -aminobutyric acid.

Table S3. The concentration of total identified polar metabolites (**TIPMs**), including total soluble carbohydrates (**TSCs**), total amino acids (**TAA**s), total organic acids (**TOA**s), and total remaining compounds (**TRC**s) in **roots** of 4-day-old seedlings of pea (*Pisum sativum* L.) cv. Nemo developed in water suspensions of bio-AgNPs at a concentration of 0, 50 and 200 mg/L. Values (in mg/g DW) are means of 3 replicates $\pm$ SD. The same letters by the values indicate no statistically significant ($p \leq 0.05$) differences (valid separately for data in rows) based on ANOVA analysis and Tukey's post-hoc test.

Metabolites	bio-AgNPs		
	0 mg/L	50 mg/L	200 mg/L
	mg/g DW		
TIPMs, including:	134.33 $\pm$ 2.30^a	123.99 $\pm$ 2.66^b	124.01 $\pm$ 3.23^b
TSCs, including:	56.05 $\pm$ 1.18^a	47.10 $\pm$ 1.26^c	52.65 $\pm$ 1.09^b
fructose	0.48 $\pm$ 0.09 ^a	0.56 $\pm$ 0.09 ^a	0.53 $\pm$ 0.02 ^a
galactose	1.07 $\pm$ 0.10 ^a	0.88 $\pm$ 0.04 ^b	1.02 $\pm$ 0.04 ^{ab}
glucose	2.00 $\pm$ 0.29 ^a	1.92 $\pm$ 0.65 ^a	1.78 $\pm$ 0.08 ^a
myo-inositol	2.81 $\pm$ 0.12 ^a	2.65 $\pm$ 0.12 ^a	2.18 $\pm$ 0.07 ^b
sucrose	49.29 $\pm$ 0.81 ^a	40.68 $\pm$ 0.35 ^c	46.87 $\pm$ 1.08 ^b
gluconic acid	0.39 $\pm$ 0.03 ^a	0.42 $\pm$ 0.02 ^a	0.27 $\pm$ 0.01 ^b
TAA s, including:	53.04 $\pm$ 2.69^a	51.12 $\pm$ 1.04^a	50.37 $\pm$ 1.62^a
alanine	6.87 $\pm$ 0.47 ^a	7.35 $\pm$ 0.48 ^a	7.10 $\pm$ 0.43 ^a
asparagine	2.60 $\pm$ 1.14 ^a	2.74 $\pm$ 0.65 ^a	2.60 $\pm$ 0.07 ^a
aspartic acid	1.21 $\pm$ 0.08 ^a	1.11 $\pm$ 0.05 ^{ab}	1.02 $\pm$ 0.05 ^b
β -alanine	0.34 $\pm$ 0.29 ^a	0.37 $\pm$ 0.20 ^a	0.49 $\pm$ 0.03 ^a
GABA	1.39 $\pm$ 0.12 ^b	1.43 $\pm$ 0.13 ^{ab}	1.67 $\pm$ 0.04 ^a
glutamic acid	2.25 $\pm$ 0.11 ^a	2.31 $\pm$ 0.07 ^a	1.97 $\pm$ 0.07 ^b
homoserine	22.49 $\pm$ 0.13 ^a	19.04 $\pm$ 0.23 ^c	21.61 $\pm$ 0.54 ^b
hydroxyproline	1.84 $\pm$ 0.25 ^a	2.04 $\pm$ 0.25 ^a	1.73 $\pm$ 0.05 ^a
isoleucine	1.40 $\pm$ 0.03 ^a	1.42 $\pm$ 0.02 ^a	1.17 $\pm$ 0.06 ^b
leucine	0.18 $\pm$ 0.02 ^b	0.22 $\pm$ 0.02 ^{ab}	0.24 $\pm$ 0.01 ^a
lysine	1.33 $\pm$ 0.20 ^{ab}	1.62 $\pm$ 0.08 ^a	1.21 $\pm$ 0.06 ^b
phenylalanine	1.74 $\pm$ 0.22 ^a	1.68 $\pm$ 0.05 ^a	1.47 $\pm$ 0.05 ^a
proline	3.00 $\pm$ 0.08 ^b	3.19 $\pm$ 0.04 ^a	1.97 $\pm$ 0.05 ^c
serine	2.95 $\pm$ 0.11 ^a	2.75 $\pm$ 0.07 ^a	2.81 $\pm$ 0.08 ^a
threonine	0.57 $\pm$ 0.09 ^a	0.56 $\pm$ 0.06 ^a	0.53 $\pm$ 0.03 ^a
tyrosine	0.65 $\pm$ 0.07 ^b	0.95 $\pm$ 0.02 ^a	0.66 $\pm$ 0.02 ^b
valine	2.21 $\pm$ 0.10 ^{ab}	2.34 $\pm$ 0.03 ^a	2.12 $\pm$ 0.09 ^b
TOA s, including:	13.15 $\pm$ 0.40^a	13.14 $\pm$ 0.18^a	9.58 $\pm$ 0.22^b
citric acid	3.12 $\pm$ 0.25 ^a	3.17 $\pm$ 0.11 ^a	1.92 $\pm$ 0.04 ^b
fumaric acid	0.23 $\pm$ 0.02 ^a	0.22 $\pm$ 0.01 ^a	0.17 $\pm$ 0.02 ^b
lactic acid	0.07 $\pm$ 0.01 ^a	0.07 $\pm$ 0.02 ^a	0.06 $\pm$ 0.00 ^a
malic acid	8.89 $\pm$ 0.17 ^a	8.74 $\pm$ 0.18 ^a	6.51 $\pm$ 0.17 ^b
malonic acid	0.06 $\pm$ 0.00 ^b	0.07 $\pm$ 0.00 ^a	0.04 $\pm$ 0.00 ^c
oxalic acid	0.17 $\pm$ 0.03 ^a	0.20 $\pm$ 0.07 ^a	0.14 $\pm$ 0.00 ^a
propionic acid	0.12 $\pm$ 0.01 ^a	0.09 $\pm$ 0.01 ^b	0.10 $\pm$ 0.00 ^{ab}
succinic acid	0.50 $\pm$ 0.13 ^a	0.57 $\pm$ 0.11 ^a	0.64 $\pm$ 0.02 ^a
TRC s, including:	12.09 $\pm$ 0.27^{ab}	12.63 $\pm$ 0.26^a	11.41 $\pm$ 0.32^b
phosphoric acid	12.01 $\pm$ 0.26 ^{ab}	12.54 $\pm$ 0.26 ^a	11.31 $\pm$ 0.32 ^b
urea	0.08 $\pm$ 0.02 ^a	0.09 $\pm$ 0.03 ^a	0.10 $\pm$ 0.01 ^a

Table S4. The concentration of total identified polar metabolites (**TIPMs**), including total soluble carbohydrates (**TSCs**), total amino acids (**TAAAs**), total organic acids (**TOAs**), and total remaining compounds (**TRCs**) in **epicotyls** of 4-day-old seedlings of pea (*Pisum sativum* L.) cv. Nemo developed in water suspensions of bio-AgNPs at a concentration of 0, 50 and 200 mg/L. Values (in mg/g DW) are means of 3 replicates $\pm$ SD. The same letters by the values indicate no statistically significant ($p \leq 0.05$) differences (valid separately for data in rows) based on ANOVA analysis and Tukey's post-hoc test.

Metabolites	bio-AgNPs		
	0 mg/L	50 mg/L	200 mg/L
	mg/g DW		
TIPMs, including:	142.84 $\pm$ 1.28^b	153.66 $\pm$ 4.97^a	149.86 $\pm$ 2.56^{ab}
TSCs, including:	73.23 $\pm$ 0.29 ^b	80.53 $\pm$ 2.72 ^a	81.25 $\pm$ 1.99 ^a
fructose	0.79 $\pm$ 0.06 ^b	0.66 $\pm$ 0.05 ^c	2.20 $\pm$ 0.04 ^a
galactose	0.41 $\pm$ 0.01 ^b	0.38 $\pm$ 0.01 ^b	1.91 $\pm$ 0.22 ^a
glucose	0.55 $\pm$ 0.04 ^b	0.66 $\pm$ 0.10 ^b	5.48 $\pm$ 0.25 ^a
myo-inositol	3.66 $\pm$ 0.22 ^a	3.79 $\pm$ 0.12 ^a	2.81 $\pm$ 0.15 ^b
sucrose	67.18 $\pm$ 0.33 ^b	74.36 $\pm$ 2.49 ^a	68.22 $\pm$ 1.97 ^b
gluconic acid	0.64 $\pm$ 0.02 ^a	0.67 $\pm$ 0.05 ^a	0.62 $\pm$ 0.02 ^a
TAAAs, including:	50.04 $\pm$ 1.05 ^a	51.74 $\pm$ 1.55 ^a	50.46 $\pm$ 0.20 ^a
alanine	6.14 $\pm$ 0.15 ^c	8.86 $\pm$ 0.10 ^a	6.62 $\pm$ 0.16 ^b
asparagine	2.83 $\pm$ 0.05 ^a	3.23 $\pm$ 0.15 ^a	3.25 $\pm$ 0.28 ^a
aspartic acid	1.33 $\pm$ 0.01 ^a	1.21 $\pm$ 0.07 ^a	1.03 $\pm$ 0.05 ^b
β -alanine	0.52 $\pm$ 0.02 ^a	0.52 $\pm$ 0.02 ^a	0.48 $\pm$ 0.00 ^a
GABA	3.53 $\pm$ 0.15 ^a	3.57 $\pm$ 0.15 ^a	3.79 $\pm$ 0.10 ^a
glutamic acid	1.58 $\pm$ 0.05 ^b	1.99 $\pm$ 0.16 ^a	1.27 $\pm$ 0.05 ^c
homoserine	20.27 $\pm$ 0.51 ^a	16.22 $\pm$ 0.49 ^b	19.41 $\pm$ 0.34 ^a
hydroxyproline	1.32 $\pm$ 0.03 ^b	1.57 $\pm$ 0.05 ^b	1.91 $\pm$ 0.21 ^a
isoleucine	1.39 $\pm$ 0.04 ^b	1.54 $\pm$ 0.06 ^a	1.39 $\pm$ 0.07 ^b
leucine	0.37 $\pm$ 0.02 ^a	0.41 $\pm$ 0.02 ^a	0.39 $\pm$ 0.03 ^a
lysine	1.45 $\pm$ 0.06 ^b	1.87 $\pm$ 0.06 ^a	1.23 $\pm$ 0.13 ^c
phenylalanine	1.39 $\pm$ 0.12 ^a	1.58 $\pm$ 0.07 ^a	1.44 $\pm$ 0.05 ^a
proline	1.99 $\pm$ 0.04 ^b	2.37 $\pm$ 0.10 ^a	1.70 $\pm$ 0.12 ^c
serine	2.53 $\pm$ 0.05 ^a	2.58 $\pm$ 0.08 ^a	2.60 $\pm$ 0.10 ^a
threonine	0.59 $\pm$ 0.02 ^b	0.66 $\pm$ 0.03 ^a	0.66 $\pm$ 0.04 ^{ab}
tyrosine	0.67 $\pm$ 0.00 ^c	1.03 $\pm$ 0.04 ^a	0.86 $\pm$ 0.05 ^b
valine	2.16 $\pm$ 0.03 ^b	2.51 $\pm$ 0.07 ^a	2.43 $\pm$ 0.05 ^a
TOAs, including:	10.00 $\pm$ 0.12 ^b	10.94 $\pm$ 0.41 ^a	8.45 $\pm$ 0.26 ^c
citric acid	2.34 $\pm$ 0.02 ^a	2.37 $\pm$ 0.08 ^a	1.66 $\pm$ 0.19 ^b
fumaric acid	0.22 $\pm$ 0.00 ^a	0.22 $\pm$ 0.01 ^a	0.16 $\pm$ 0.02 ^b
lactic acid	0.30 $\pm$ 0.04 ^a	0.18 $\pm$ 0.01 ^b	0.27 $\pm$ 0.07 ^{ab}
malic acid	6.15 $\pm$ 0.06 ^b	7.11 $\pm$ 0.25 ^a	5.31 $\pm$ 0.10 ^c
malonic acid	0.06 $\pm$ 0.00 ^b	0.07 $\pm$ 0.00 ^a	0.03 $\pm$ 0.01 ^c
oxalic acid	0.15 $\pm$ 0.00 ^a	0.16 $\pm$ 0.02 ^a	0.18 $\pm$ 0.04 ^a
propionic acid	0.11 $\pm$ 0.00 ^a	0.11 $\pm$ 0.01 ^a	0.12 $\pm$ 0.00 ^a
succinic acid	0.68 $\pm$ 0.02 ^a	0.70 $\pm$ 0.05 ^a	0.72 $\pm$ 0.07 ^a
TRCs, including:	9.57 $\pm$ 0.13 ^b	10.46 $\pm$ 0.37 ^a	9.70 $\pm$ 0.31 ^b
phosphoric acid	9.54 $\pm$ 0.14 ^b	10.42 $\pm$ 0.37 ^a	9.68 $\pm$ 0.30 ^b
urea	0.03 $\pm$ 0.00 ^a	0.04 $\pm$ 0.00 ^a	0.03 $\pm$ 0.01 ^a

Table S5. The concentration of total identified polar metabolites (**TIPMs**), including total soluble carbohydrates (**TSCs**), total amino acids (**TAA**s), total organic acids (**TOA**s), and total remaining compounds (**TRC**s) in **cotyledons** of 4-day-old seedlings of pea (*Pisum sativum* L.) cv. Nemo developed in water suspensions of bio-AgNPs at a concentration of 0, 50 and 200 mg/L. Values (in mg/g DW) are means of 3 replicates $\pm$ SD. The same letters by the values indicate no statistically significant ($p \leq 0.05$) differences (valid separately for data in rows) based on ANOVA analysis and Tukey's post-hoc test.

Metabolites	bio-AgNPs		
	0 mg/L	50 mg/L	200 mg/L
	mg/g DW		
TIPMs, including:	77.47 $\pm$ 2.14^b	87.76 $\pm$ 3.01^a	83.28 $\pm$ 1.33^a
TSCs, including:	62.39 $\pm$ 1.96^b	71.93 $\pm$ 2.50^a	67.74 $\pm$ 1.12^a
fructose	0.09 $\pm$ 0.01 ^a	0.09 $\pm$ 0.01 ^a	0.10 $\pm$ 0.01 ^a
galactinol	0.06 $\pm$ 0.00 ^b	0.04 $\pm$ 0.00 ^c	0.08 $\pm$ 0.01 ^a
galactose	0.03 $\pm$ 0.00 ^a	0.03 $\pm$ 0.00 ^b	0.03 $\pm$ 0.00 ^b
glucose	0.05 $\pm$ 0.01 ^b	0.06 $\pm$ 0.01 ^b	0.11 $\pm$ 0.01 ^a
myo-inositol	1.97 $\pm$ 0.02 ^b	2.17 $\pm$ 0.08 ^a	1.89 $\pm$ 0.06 ^b
raffinose	0.07 $\pm$ 0.01 ^b	0.04 $\pm$ 0.01 ^b	0.12 $\pm$ 0.02 ^a
stachyose	0.14 $\pm$ 0.01 ^a	0.00 $\pm$ 0.00 ^b	0.21 $\pm$ 0.05 ^a
sucrose	59.80 $\pm$ 1.59 ^b	69.19 $\pm$ 2.45 ^a	65.05 $\pm$ 1.00 ^a
gluconic acid	0.17 $\pm$ 0.04 ^b	0.32 $\pm$ 0.06 ^a	0.15 $\pm$ 0.00 ^b
TAA s, including:	8.80 $\pm$ 0.28^b	9.31 $\pm$ 0.36^{ab}	9.53 $\pm$ 0.15^a
alanine	0.55 $\pm$ 0.02 ^a	0.44 $\pm$ 0.01 ^b	0.44 $\pm$ 0.02 ^b
asparagine	0.06 $\pm$ 0.00 ^b	0.07 $\pm$ 0.01 ^b	0.11 $\pm$ 0.01 ^a
aspartic acid	0.01 $\pm$ 0.00 ^b	0.01 $\pm$ 0.00 ^b	0.03 $\pm$ 0.00 ^a
β -alanine	0.09 $\pm$ 0.00 ^{ab}	0.09 $\pm$ 0.00 ^b	0.10 $\pm$ 0.00 ^a
GABA	2.28 $\pm$ 0.01 ^a	2.26 $\pm$ 0.10 ^a	1.99 $\pm$ 0.01 ^b
glutamic acid	0.72 $\pm$ 0.14 ^b	0.66 $\pm$ 0.15 ^b	0.96 $\pm$ 0.02 ^a
homoserine	1.49 $\pm$ 0.02 ^b	1.90 $\pm$ 0.09 ^a	1.53 $\pm$ 0.03 ^b
hydroxyproline	0.25 $\pm$ 0.03 ^b	0.28 $\pm$ 0.03 ^{ab}	0.31 $\pm$ 0.02 ^a
isoleucine	0.19 $\pm$ 0.01 ^b	0.22 $\pm$ 0.01 ^a	0.23 $\pm$ 0.01 ^a
leucine	0.11 $\pm$ 0.01 ^b	0.12 $\pm$ 0.02 ^b	0.15 $\pm$ 0.01 ^a
lysine	0.43 $\pm$ 0.02 ^c	0.54 $\pm$ 0.02 ^b	0.68 $\pm$ 0.02 ^a
phenylalanine	0.32 $\pm$ 0.02 ^b	0.36 $\pm$ 0.02 ^a	0.37 $\pm$ 0.01 ^a
proline	0.60 $\pm$ 0.02 ^a	0.56 $\pm$ 0.02 ^a	0.60 $\pm$ 0.02 ^a
serine	0.76 $\pm$ 0.02 ^c	0.81 $\pm$ 0.03 ^b	0.92 $\pm$ 0.01 ^a
threonine	0.05 $\pm$ 0.00 ^a	0.05 $\pm$ 0.00 ^a	0.05 $\pm$ 0.01 ^a
tyrosine	0.45 $\pm$ 0.01 ^b	0.46 $\pm$ 0.01 ^b	0.55 $\pm$ 0.02 ^a
valine	0.45 $\pm$ 0.01 ^b	0.49 $\pm$ 0.01 ^a	0.52 $\pm$ 0.01 ^a
TOA s, including:	4.28 $\pm$ 0.11^a	4.21 $\pm$ 0.11^a	3.92 $\pm$ 0.04^b
citric acid	1.90 $\pm$ 0.07 ^b	1.92 $\pm$ 0.10 ^b	2.36 $\pm$ 0.04 ^a
fumaric acid	0.04 $\pm$ 0.00 ^b	0.04 $\pm$ 0.00 ^a	0.04 $\pm$ 0.00 ^b
lactic acid	1.05 $\pm$ 0.03 ^a	0.84 $\pm$ 0.02 ^b	0.29 $\pm$ 0.01 ^c
malic acid	0.37 $\pm$ 0.01 ^c	0.45 $\pm$ 0.03 ^b	0.51 $\pm$ 0.01 ^a
malonic acid	0.13 $\pm$ 0.01 ^b	0.14 $\pm$ 0.00 ^a	0.15 $\pm$ 0.00 ^a
oxalic acid	0.17 $\pm$ 0.01 ^a	0.17 $\pm$ 0.03 ^a	0.16 $\pm$ 0.00 ^a
propionic acid	0.03 $\pm$ 0.00 ^c	0.04 $\pm$ 0.00 ^b	0.05 $\pm$ 0.00 ^a
succinic acid	0.59 $\pm$ 0.02 ^a	0.60 $\pm$ 0.04 ^a	0.36 $\pm$ 0.00 ^b
TRC s, including:	2.00^b $\pm$ 0.07	2.33 $\pm$ 0.07^a	2.10 $\pm$ 0.03^b
phosphoric acid	1.95 ^b $\pm$ 0.07	2.27 $\pm$ 0.07 ^a	2.09 $\pm$ 0.03 ^b
urea	0.05 ^a $\pm$ 0.00	0.05 $\pm$ 0.01 ^a	0.01 $\pm$ 0.00 ^b