

Supplementary Material

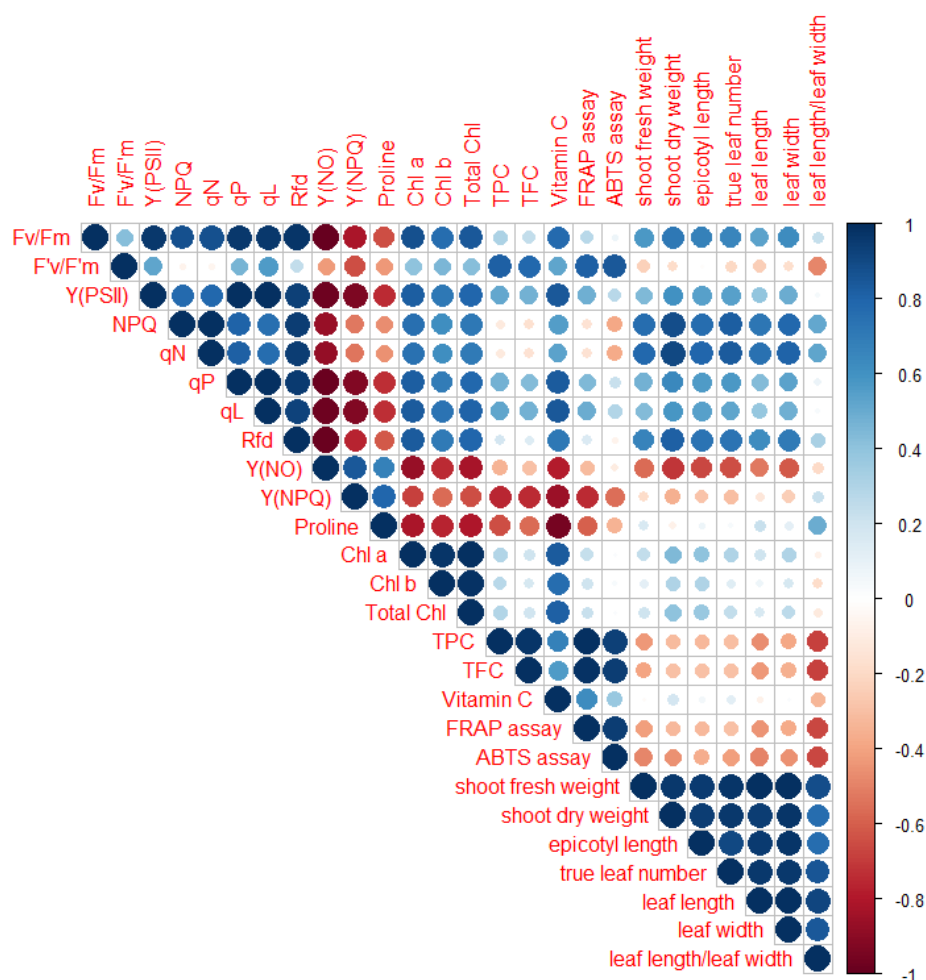


Figure S1. Correlation analysis among chlorophyll fluorescence parameters, growth parameters, nutritional compounds and antioxidant activities in lettuce seedlings at the last day of the experiment (8th day). Blue color represents positive correlation whereas red represents negative correlation. Color intensity and size of the circle are proportional to the correlation coefficients which are depicted in the legend to the right. TPC: total phenol content, TFC: total flavonoid content, FRAP: ferric reducing antioxidant power; ABTS: 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid). Refer to the table 1 for detail information of CF parameters.

Table S1. Chlorophyll fluorescence parameters measured for lettuce seedlings as affected by NaCl concentrations during a progressive treatment time.

CF parameters	NaCl concentration (mM)	Treatment time (day)				
		0 day	2 day	4 day	6 day	8 day
Fv/Fm	0 (control)	0.82 ±0.00aAB	0.81 ±0.00aA	0.82 ±0.00aAB	0.82 ±0.01abAB	0.82 ±0.00bAB
	50	0.82 ±0.00aB	0.81 ±0.00aA	0.82 ±0.00aB	0.82 ±0.00bcB	0.82 ±0.00bB
	100	0.82 ±0.00aA	0.81 ±0.00aB	0.82 ±0.00aB	0.82 ±0.00abAB	0.82 ±0.01bB
	200	0.82 ±0.00aAB	0.81 ±0.01aA	0.82 ±0.00aAB	0.83 ±0.01cC	0.82 ±0.01bAB
	300	0.82 ±0.00aA	0.82 ±0.01aA	0.82 ±0.00aA	0.82 ±0.00bcA	0.82 ±0.00bA
	400	0.82 ±0.00aB	0.81 ±0.00aB	0.82 ±0.01aB	0.81 ±0.01aB	0.77 ±0.02aA
Fv/F'm	0 (control)	0.71 ±0.02bB	0.68 ±0.02bA	0.68 ±0.01bA	0.68 ±0.00bcA	0.67 ±0.02bA
	50	0.69 ±0.01abC	0.66 ±0.00abA	0.65 ±0.00aA	0.67 ±0.01abB	0.65 ±0.00aA
	100	0.70 ±0.03bC	0.66 ±0.02abB	0.66 ±0.01aAB	0.67 ±0.01abB	0.64 ±0.01aA
	200	0.69 ±0.02abB	0.66 ±0.02abA	0.65 ±0.01aA	0.67 ±0.01aA	0.64 ±0.01aA
	300	0.66 ±0.01aAB	0.65 ±0.02aA	0.65 ±0.01aA	0.68 ±0.01abB	0.65 ±0.01aA
	400	0.69 ±0.02abB	0.65 ±0.02aA	0.66 ±0.02aA	0.69 ±0.01cB	0.64 ±0.01aA
Y(PSII)	0 (control)	0.14 ±0.01aA	0.23 ±0.06aAB	0.27 ±0.05abAB	0.34 ±0.04cC	0.36 ±0.03cC
	50	0.14 ±0.01aA	0.24 ±0.03aB	0.29 ±0.03abcC	0.29 ±0.01bC	0.32 ±0.03bcC
	100	0.15 ±0.02aA	0.34 ±0.04bBC	0.31 ±0.03bcB	0.36 ±0.04cC	0.34 ±0.03bcBC
	200	0.16 ±0.02abA	0.36 ±0.03bC	0.28 ±0.02abB	0.35 ±0.03cC	0.31 ±0.01bB
	300	0.21 ±0.04bA	0.36 ±0.03bB	0.33 ±0.03cB	0.25 ±0.03bA	0.31 ±0.06bB
	400	0.20 ±0.06bBC	0.32 ±0.04bD	0.25 ±0.03aC	0.17 ±0.03aAB	0.14 ±0.03aA
NPQ	0 (control)	0.93 ±0.17aA	1.06 ±0.16aAB	1.17 ±0.08aAB	1.05 ±0.07abAB	1.28 ±0.16bC
	50	1.05 ±0.10abA	1.27 ±0.05abB	1.47 ±0.06bcdC	1.26 ±0.07cB	1.50 ±0.05cC
	100	0.96 ±0.18aA	1.23 ±0.15abBC	1.41 ±0.07bcC	1.18 ±0.15bcB	1.62 ±0.15cD
	200	1.05 ±0.19abA	1.32 ±0.20bB	1.54 ±0.09dC	1.34 ±0.16cB	1.61 ±0.04cC
	300	1.24 ±0.11bA	1.38 ±0.18bAB	1.52 ±0.07cdB	1.24 ±0.14cA	1.45 ±0.11bcB
	400	1.05 ±0.13abA	1.36 ±0.21bB	1.34 ±0.15aB	0.90 ±0.12aA	0.95 ±0.25aA
qN	0 (control)	0.56 ±0.06aA	0.61 ±0.05aAB	0.63 ±0.02aB	0.60 ±0.02bAB	0.65 ±0.04bB
	50	0.61 ±0.03abA	0.66 ±0.01bB	0.69 ±0.01bcC	0.65 ±0.01cB	0.70 ±0.01bcC
	100	0.58 ±0.05aA	0.65 ±0.03abB	0.68 ±0.01bcBC	0.64 ±0.03bcB	0.72 ±0.02cC
	200	0.60 ±0.06abA	0.66 ±0.04bB	0.70 ±0.02cB	0.66 ±0.03cB	0.71 ±0.01cB
	300	0.65 ±0.02bA	0.67 ±0.04bAB	0.70 ±0.01cB	0.64 ±0.03cA	0.69 ±0.02bcB
	400	0.60 ±0.04abA	0.67 ±0.04bB	0.67 ±0.03bB	0.57 ±0.04aA	0.59 ±0.06aA
qP	0 (control)	0.19 ±0.02aA	0.34 ±0.10aB	0.40 ±0.07abB	0.50 ±0.06cC	0.54 ±0.04bC
	50	0.20 ±0.03aA	0.37 ±0.04aB	0.45 ±0.04bcCD	0.43 ±0.01bC	0.49 ±0.04bD
	100	0.21 ±0.03aA	0.51 ±0.06bB	0.47 ±0.04bcB	0.53 ±0.05cB	0.53 ±0.04bB
	200	0.24 ±0.03abA	0.55 ±0.03bC	0.44 ±0.04abB	0.52 ±0.04cC	0.48 ±0.02bB
	300	0.31 ±0.07cA	0.55 ±0.03bB	0.52 ±0.05cB	0.38 ±0.05bA	0.48 ±0.09bB
	400	0.29 ±0.09bcA	0.49 ±0.06bC	0.38 ±0.04aB	0.25 ±0.06aA	0.23 ±0.05aA
qL	0 (control)	0.56 ±0.02aA	0.79 ±0.13aB	0.89 ±0.10abB	1.03 ±0.07cdC	1.05 ±0.08cC
	50	0.56 ±0.04aA	0.81 ±0.05aB	0.90 ±0.05abC	0.94 ±0.03bcC	0.96 ±0.04bcC
	100	0.59 ±0.05aA	1.00 ±0.09bBC	0.94 ±0.06bB	1.04 ±0.07dC	0.97 ±0.04bcBC
	200	0.64 ±0.03abA	1.02 ±0.06bC	0.89 ±0.03abB	1.02 ±0.05cdC	0.93 ±0.03bB
	300	0.73 ±0.10bA	1.02 ±0.06bC	0.97 ±0.05bBC	0.86 ±0.06bB	0.93 ±0.10bBC
	400	0.73 ±0.14bBC	0.95 ±0.05bD	0.82 ±0.04aC	0.66 ±0.10aB	0.53 ±0.09aA
Rfd	0 (control)	1.18 ±0.22aA	1.63 ±0.35aB	1.89 ±0.19aB	1.82 ±0.29bB	2.31 ±0.20bC
	50	1.33 ±0.15aA	1.92 ±0.15aB	2.36 ±0.12bC	2.03 ±0.09bB	2.45 ±0.11bC
	100	1.25 ±0.23aA	2.27 ±0.08bB	2.31 ±0.08bBC	2.14 ±0.26bcB	2.59 ±0.34bC
	200	1.40 ±0.27aA	2.47 ±0.21bB	2.39 ±0.19bB	2.41 ±0.15cB	2.51 ±0.09bB
	300	1.76 ±0.28bA	2.56 ±0.14bB	2.64 ±0.11cB	1.89 ±0.29bA	2.41 ±0.36bB
	400	1.53 ±0.34abA	2.32 ±0.36bB	2.00 ±0.29aB	1.20 ±0.23aA	1.17 ±0.36aA
Y(NO)	0 (control)	0.22 ±0.01bD	0.18 ±0.02cC	0.17 ±0.01bB	0.16 ±0.01abB	0.14 ±0.01aA
	50	0.22 ±0.01bC	0.17 ±0.01bB	0.15 ±0.00aA	0.15 ±0.00abA	0.14 ±0.01aA
	100	0.22 ±0.02bB	0.15 ±0.01aA	0.15 ±0.00aA	0.15 ±0.01abA	0.14 ±0.00aA
	200	0.20 ±0.01abC	0.15 ±0.00aB	0.15 ±0.00aB	0.14 ±0.00aA	0.14 ±0.01aA
	300	0.18 ±0.02aB	0.15 ±0.00aA	0.14 ±0.01aA	0.16 ±0.01bA	0.15 ±0.01aA
	400	0.19 ±0.02aAB	0.15 ±0.01aA	0.17 ±0.01bA	0.21 ±0.03cB	0.27 ±0.06bC
Y(NPQ)	0 (control)	0.64 ±0.00bC	0.58 ±0.05aB	0.56 ±0.04bB	0.50 ±0.04aA	0.50 ±0.03aA
	50	0.64 ±0.01bC	0.59 ±0.02aB	0.56 ±0.02abA	0.56 ±0.01aA	0.54 ±0.02abA
	100	0.64 ±0.00bC	0.51 ±0.04abAB	0.55 ±0.03abB	0.50 ±0.04bA	0.52 ±0.03abAB
	200	0.63 ±0.00abC	0.49 ±0.03bA	0.57 ±0.02bB	0.51 ±0.03aA	0.55 ±0.01bB
	300	0.61 ±0.02aC	0.49 ±0.03bA	0.52 ±0.03aAB	0.59 ±0.02bcC	0.54 ±0.04abB
	400	0.61 ±0.04aB	0.53 ±0.03bA	0.58 ±0.02bB	0.61 ±0.01cB	0.59 ±0.03cB

Values are mean ± SD of five biological replicates. Different small alphabets within a column of each parameter are statistically significant at $p < 0.05$, while different capital alphabets within a row are statistically significant at $p < 0.05$ using Duncan's multiple range test.

Table S2. Proline, chlorophyll and ascorbic acid content in lettuce seedlings as affected by NaCl concentration and treatment time.

Parameters	NaCl concentration (mM)	Treatment time (day)				
		0	2	4	6	8
Proline (mg g ⁻¹)	0 mM	0.12 ±0.05AB	0.09 ±0.05aA	0.20 ±0.03aB	0.49 ±0.04aC	0.76 ±0.07aD
	50 mM	0.12 ±0.05A	0.15 ±0.03aA	0.17 ±0.02aA	0.79 ±0.07aB	1.57 ±0.07aC
	100 mM	0.12 ±0.05A	0.34 ±0.01bB	0.66 ±0.02bC	2.36 ±0.12bD	2.60 ±0.05bE
	200 mM	0.12 ±0.05A	0.58 ±0.13cB	4.58 ±0.06cC	12.24 ±0.03cD	14.25 ±0.24cE
	300 mM	0.12 ±0.05A	0.73 ±0.02dB	9.90 ±0.02dC	20.00 ±0.26dD	21.35 ±0.69dE
	400 mM	0.12 ±0.05A	1.79 ±0.04eB	10.32 ±0.03eC	21.71 ±1.08eD	24.21 ±1.12eE
Chl a (mg g ⁻¹)	0 mM	7.47 ±0.62A	7.88 ±0.40aAB	8.74 ±0.11bC	8.39 ±0.27cBC	7.65 ±0.62bAB
	50 mM	7.47 ±0.62A	8.15 ±0.44aAB	8.40 ±0.05bB	8.76 ±0.24cB	8.76 ±0.36cB
	100 mM	7.47 ±0.62A	7.52 ±1.29aA	8.63 ±0.18bAB	9.17 ±0.44cB	7.49 ±0.99bA
	200 mM	7.47 ±0.62A	7.30 ±0.46aA	8.31 ±0.58abA	7.45 ±0.92bA	7.62 ±0.48bA
	300 mM	7.47 ±0.62A	8.32 ±0.35aB	8.32 ±0.28abB	8.47 ±0.08cB	6.80 ±0.28bA
	400 mM	7.47 ±0.62B	7.51 ±0.34aB	7.71 ±0.46aB	5.49 ±0.49aA	5.23 ±0.19aA
Chl b (mg g ⁻¹)	0 mM	2.74 ±0.31A	3.09 ±0.27aABC	3.52 ±0.17bC	3.21 ±0.14cdBC	2.81 ±0.25bAB
	50 mM	2.74 ±0.31A	3.26 ±0.27aB	3.41 ±0.06bB	3.44 ±0.09cdB	3.56 ±0.17cB
	100 mM	2.74 ±0.31A	2.81 ±0.67aAB	3.58 ±0.13bB	3.58 ±0.25dB	2.53 ±0.48bA
	200 mM	2.74 ±0.31A	2.78 ±0.19aA	3.27 ±0.47abA	2.69 ±0.41bA	2.75 ±0.24bA
	300 mM	2.74 ±0.31B	3.26 ±0.19aC	3.13 ±0.23abBC	3.14 ±0.15cBC	2.34 ±0.16bA
	400 mM	2.74 ±0.31B	2.82 ±0.15aB	2.80 ±0.28aB	1.79 ±0.10aA	1.71 ±0.06aA
Total Chl (mg g ⁻¹)	0 mM	10.20 ±0.88A	10.97 ±0.66aAB	12.26 ±0.18bC	11.60 ±0.40cBC	10.46 ±0.86bAB
	50 mM	10.20 ±0.88A	11.41 ±0.71aB	11.80 ±0.04bB	12.20 ±0.33cB	12.31 ±0.52cB
	100 mM	10.20 ±0.88A	10.33 ±1.94aA	12.21 ±0.31bAB	12.75 ±0.67cB	10.03 ±1.47bA
	200 mM	10.20 ±0.88A	10.08 ±0.65aA	11.58 ±1.05abA	10.15 ±1.33bA	10.37 ±0.72bA
	300 mM	10.20 ±0.88B	11.59 ±0.53aC	11.45 ±0.51abC	11.60 ±0.22cC	9.15 ±0.44bA
	400 mM	10.20 ±0.88B	10.33 ±0.49aB	10.51 ±0.74aB	7.27 ±0.54aA	6.94 ±0.25aA
Ascorbic acid (mg g ⁻¹)	0 mM	3.42 ±0.10C	3.05 ±0.06abB	2.76 ±0.12cdA	2.77 ±0.15cA	3.01 ±0.08eB
	50 mM	3.42 ±0.10C	3.31 ±0.21bC	2.91 ±0.05dBA	2.62 ±0.03bcA	2.69 ±0.20dB
	100 mM	3.42 ±0.10C	3.29 ±0.40bC	2.86 ±0.21dBA	2.37 ±0.07bA	2.71 ±0.06dB
	200 mM	3.42 ±0.10C	2.75 ±0.01aB	2.44 ±0.11bA	2.77 ±0.29cB	2.41 ±0.14cA
	300 mM	3.42 ±0.10D	3.04 ±0.12aC	2.50 ±0.23bcB	2.01 ±0.09aA	1.81 ±0.10bA
	400 mM	3.42 ±0.10D	2.75 ±0.14aC	2.12 ±0.08aB	2.05 ±0.04aB	1.45 ±0.05aA

Values are mean ± SD of three replicates. Different small alphabets within a column of each parameter are statistically significant at $p < 0.05$ while different capital alphabets within a row are statistically significant at $p < 0.05$ using Duncan's multiple range test. At zero date, the statistical analysis among the salt levels could not performed as the value are same. Chl: chlorophyll.

Table S3. Total phenol and total flavonoid content, and antioxidant activity in lettuce seedlings as affected by NaCl concentration and treatment time.

Parameters	NaCl concentration (mM)	Treatment time (day)				
		0	2	4	6	8
TPC (mg GAE g ⁻¹)	0 mM	12.42 ±1.00C	12.65 ±0.43bC	9.73 ±0.27bcA	10.06 ±0.18dA	11.29 ±0.57dB
	50 mM	12.42 ±1.00C	11.30 ±0.55aB	8.58 ±0.50aA	8.79 ±0.20cA	8.01 ±0.11bcA
	100 mM	12.42 ±1.00C	11.89 ±0.72abBC	10.76 ±0.66cB	8.10 ±0.42abA	8.27 ±0.47cA
	200 mM	12.42 ±1.00C	10.91 ±0.36aB	8.43 ±1.03aA	8.36 ±0.19bcA	7.16 ±0.09aA
	300 mM	12.42 ±1.00C	10.99 ±0.62aB	8.46 ±0.47aA	7.62 ±0.50aA	7.51 ±0.12abA
	400 mM	12.42 ±1.00C	11.60 ±0.50aC	9.27 ±0.32abB	8.51 ±0.35bcB	7.31 ±0.30aA
TFC (mg CE g ⁻¹)	0 mM	14.59 ±1.34B	18.12 ±1.13bC	13.49 ±0.23cB	10.40 ±0.15cA	11.84 ±0.95cA
	50 mM	14.59 ±1.34C	15.91 ±1.19aB	9.10 ±0.83aA	8.61 ±0.15bA	8.24 ±0.30bA
	100 mM	14.59 ±1.34C	16.11 ±0.72aD	10.70 ±0.75bB	7.71 ±0.39aA	8.83 ±0.67bA
	200 mM	14.59 ±1.34B	14.98 ±0.97aB	8.41 ±1.06aA	8.13 ±0.32abA	6.94 ±0.30aA
	300 mM	14.59 ±1.34B	15.47 ±0.99aB	9.20 ±0.40aA	7.67 ±0.80aA	8.38 ±0.73bA
	400 mM	14.59 ±1.34C	16.14 ±1.03aD	9.47 ±0.30aB	7.93 ±0.46abA	7.76 ±0.52abA
FRAP assay (μM TE g ⁻¹)	0 mM	87.02 ±8.20B	87.18 ±8.18bB	68.51 ±1.15bA	64.49 ±7.64bA	81.58 ±2.33cB
	50 mM	87.02 ±8.20B	78.30 ±5.23abB	59.28 ±6.05aA	57.33 ±1.12aA	53.63 ±2.40abA
	100 mM	87.02 ±8.20C	78.88 ±2.30abBC	72.61 ±5.98bB	51.17 ±1.89aA	57.25 ±4.42bA
	200 mM	87.02 ±8.20C	73.13 ±1.87aB	54.10 ±4.70aA	53.55 ±1.71aA	48.60 ±5.36aA
	300 mM	87.02 ±8.20C	74.63 ±11.36abB	57.93 ±2.07aA	50.49 ±2.86aA	52.54 ±2.82abA
	400 mM	87.02 ±8.20C	80.91 ±5.95abC	60.44 ±2.61aB	54.60 ±2.62aAB	50.52 ±2.26aA
ABTS assay (μM TE g ⁻¹)	0 mM	121.29 ±7.32C	119.12 ±4.93aC	107.82 ±3.81cB	98.00 ±2.62bA	117.92 ±2.32cC
	50 mM	121.29 ±7.32C	108.33 ±6.48aB	85.63 ±7.74aA	81.64 ±1.42aA	81.04 ±6.47abA
	100 mM	121.29 ±7.32C	118.25 ±11.61aC	97.81 ±4.87bB	84.15 ±5.76aA	79.45 ±1.77abA
	200 mM	121.29 ±7.32C	112.91 ±9.31aC	87.41 ±0.37aB	83.43 ±2.59aAB	74.03 ±5.45aA
	300 mM	121.29 ±7.32B	111.52 ±7.20aB	88.83 ±2.72abA	82.04 ±3.87aA	85.86 ±4.94bA
	400 mM	121.29 ±7.32B	121.94 ±9.74aB	88.07 ±7.33aA	92.09 ±2.06bA	84.58 ±4.32bA

Values are mean ± SD of three replicates. Different small alphabets within a column of each parameter are statistically significant at $p < 0.05$ while different capital alphabets within a row are statistically significant at $p < 0.05$ using Duncan's multiple range test. At zero date, the statistical analysis among the salt levels could not performed as the value are same. TPC: total phenol content; TFC: total flavonoid content; GAE: galic acid equivalent; CE: catechin hydrate equivalent; FRAP: ferric reducing antioxidant power; ABTS: 2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid); TE: trolox equivalent.