

**Supplementary Figure 1.** Chromatogram of the phenolic standards mixture at 280 nm. Peak ID: 2.9 min, protocatechuic acid; 5.1 min, *p*-hydroxybenzoic acid; 6.2 min, chlorogenic acid; 6.6 min, vanillic acid; 7.3 min, caffeic acid; 7.8 min, syringic acid; 9.4 min, vanillin; 11.3 min, *p*-coumaric acid; 13.4, trans-ferulic acid; 16.6 min, *o*-coumaric acid; 21.3 min, trans-cinnamic acid; 23.1 min, 3-methoxycinnamic acid; 26.8 min, ethyl ferulate.

**Supplementary Table 1.** Sugar composition (% w/w dried rachis) of hot water extract (free sugars) and holocellulose (cellulose plus hemicelluloses) fractions of wheat rachis. Values represent the mean of four replications ± SE. CS-H2O, mock inoculated CS; CS-Fg, *Fusarium-*inoculated CS; CS-7EL-H2O, mock inoculated CS-7EL; CS-7EL-Fg, *Fusarium*-inoculated CS-7EL.

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| Fraction | Sugar |  Treatment |
| CS-H2O | CS-Fg | CS-7EL-H2O | CS-7EL-Fg | P value |
| Hot water | Fructose | 0.61 ± 0.08b | 1.02 ± 0.05a | 0.67 ± 0.09b | 0.97 ± 0.04a | 0.0019 |
| Glucose | 0.75 ± 0.11c  |  1.40 ± 0.11ab | 1.06 ± 0.13bc | 1.81 ± 0.10a | 0.00015 |
| Sucrose | 2.50 ± 0.34 | 2.52 ± 0.18 | 1.97 ± 0.17 | 2.45 ± 0.13 | 0.283 |
| Unknown | 0.61 ± 0.07a | 0.34 ± 0.02c | 0.54 ± 0.02ab | 0.43 ± 0.02bc | 0.0015 |
| Total  | 4.46 ± 0.51 | 5.28 ± 0.18 | 4.24 ± 0.40 | 5.66 ± 0.28 | 0.054 |
| Holocellulose | Xylose | 11.79 ± 0.22ab | 10.00 ± 0.58b | 12.33 ± 0.71a | 12.32 ± 0.19a | 0.015 |
| Arabinose | 1.97 ± 0.09  | 1.93 ± 0.17 | 2.18 ± 0.19 | 2.14 ± 0.06 | 0.524 |
| Fructose | 2.41 ± 0.09ab | 2.15 ± 0.05b | 2.52 ± 0.10a | 2.37 ± 0.05ab | 0.033 |
| Glucose  | 13.76 ± 0.54ab | 11.78 ± 0.29b | 14.26 ± 0.61a | 13.63 ± 0.30ab | 0.012 |

values within a row with different letters are significantly different

**Supplementary Table 2.** Wheat rachis phenolic composition and content (µg/g dried rachis) of free, conjugated and bound fractions. Values represent the mean of four replications ± SE. CS-H2O, mock inoculated CS; CS-Fg, *Fusarium-*inoculated CS; CS-7EL-H2O, mock inoculated CS-7EL; CS-7EL-Fg, *Fusarium*-inoculated CS-7EL.

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| Fraction | Phenolic | Treatment |
| CS-H2O | CS-Fg | CS-7EL-H2O | CS-7EL-Fg | P value |
| Free | caffeic acid | 7.08 ± 0.13c | 42.20 ± 5.10a | 6.32 ± 0.57c | 15.77 ± 2.55b | 0.0000 |
| vanillin | 4.98 ± 0.11a | Trace | 4.19 ± 0.13b | 5.47 ± 0.23a | 0.0003 |
| p-coumaric acid | 22.40 ± 1.27b | 55.84 ± 2.43a | 18.28 ± 0.94b | 24.96 ± 4.24b | 0.0000 |
| t-ferulic acid | 13.33 ± 3.27b | 23.84 ± 1.37a | 5.98 ± 0.77b | 15.82 ± 3.67ab | 0.0010 |
| t-cinnamic acid | 2.43 ± 0.07 | 2.77 ± 0.31 | 2.55 ± 0.12 | 2.35 ± 0.04 | 0.371 |
| Flavonoids | 247.38 ± 9.77 | Trace | 268.76 ± 7.70 | 232.60 ± 25.24 | 0.229 |
| Conjugated | p-hydroxybenzoic acid | 15.85 ± 0.92c | 206.32 ± 31.38a | 17.73 ± 0.68c | 70.81 ± 8.68b | 0.0000 |
| vanillic acid | 18.42 ± 1.48a | 18.35 ± 0.44a | 14.79 ± 0.30b | 14.35 ± 1.14b | 0.016 |
| Syringic acid | 15.11 ± 1.18ab | 11.71 ± 0.37b | 18.69 ± 1.72a | 15.14 ± 1.37ab | 0.012 |
| vanillin | Trace | 6.33 ± 1.51 | 4.00 ± 1.04 | 4.99 ± 0.76 | 0.392 |
| p-coumaric acid | 113.26 ± 4.04 | 141.34 ± 10.60 | 128.34 ± 4.76 | 113.69 ± 6.19 | 0.082 |
| t-ferulic acid | 35.00 ± 2.15b | 139.67 ± 11.33a | 35.38 ± 3.88b | 45.86 ± 3.63b | 0.0000 |
| t-cinnamic acid | 1.43 ± 0.17b | 3.11 ± 0.31a | 1.31 ± 0.29b | Trace | 0.0015 |
| Bound | caffeic acid | 195.84 ± 8.37b | 247.33 ± 8.60a | 165.66 ± 8.69c | 159.90 ± 14.32c | 0.001 |
| vanillin | 169.95 ± 20.45a | 120.24 ± 19.24b | 186.50 ± 7.74a | 191.09 ± 17.64a | 0.045 |
| P-coumaric acid | 2585.47 ± 98.14a | 2204.57 ± 158.39ab | 2283.26 ± 108.68ab | 1890.19 ±79.79b | 0.0088 |
| t-ferulic acid | 1366.31 ± 54.77ab | 1214.93 ± 91.87b | 1570.89 ± 50.87a | 1324.23 ± 55.46ab | 0.0158 |

values within a row with different letters are significantly different