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**SUPPLEMENTARY DATA**

# NMR-based metabolomics reveals effect of *Ganoderma boninense* infection on oil palm leaf at 30 days post-infection

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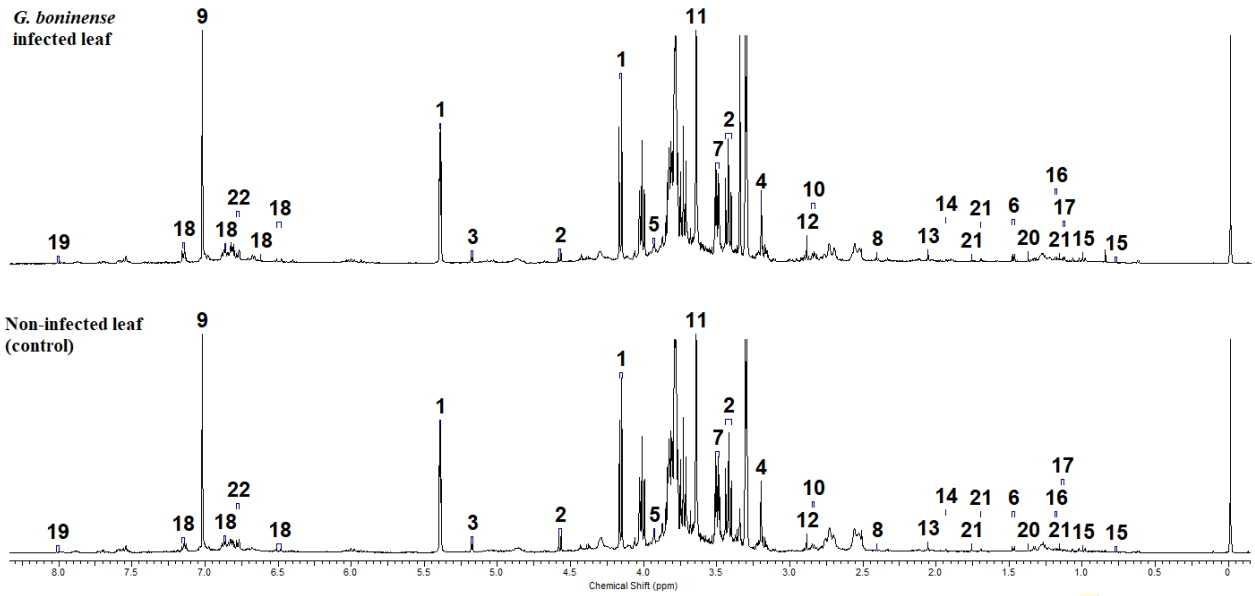


**Fig S1.** Comparison of $^{1}$H NMR spectrum of non-infected and *G. boninense* infected oil palm leaf. Peak assignments: (1) sucrose, (2) xylose, (3) *α*-glucose, (4) choline, (5) asparagine, (6) alanine, (7) *S*-sulfocysteine, (8) succinic acid, (9) gallic acid, (10) epicatechin, (11) indole-3-acetic acid, (12) trimethylamine, (13) *N*-acetylglucosamine, (14) *N*-acetyltyrosine, (15) *β*-sitosterol, (16) 2,3-butanediol, (17) lactic acid, (18) caffeic acid, (19) *p*-hydroxybenzoic acid, (20) *α*-tocopherol, (21) *β*-cryptoxanthin, (22) kaempferol.

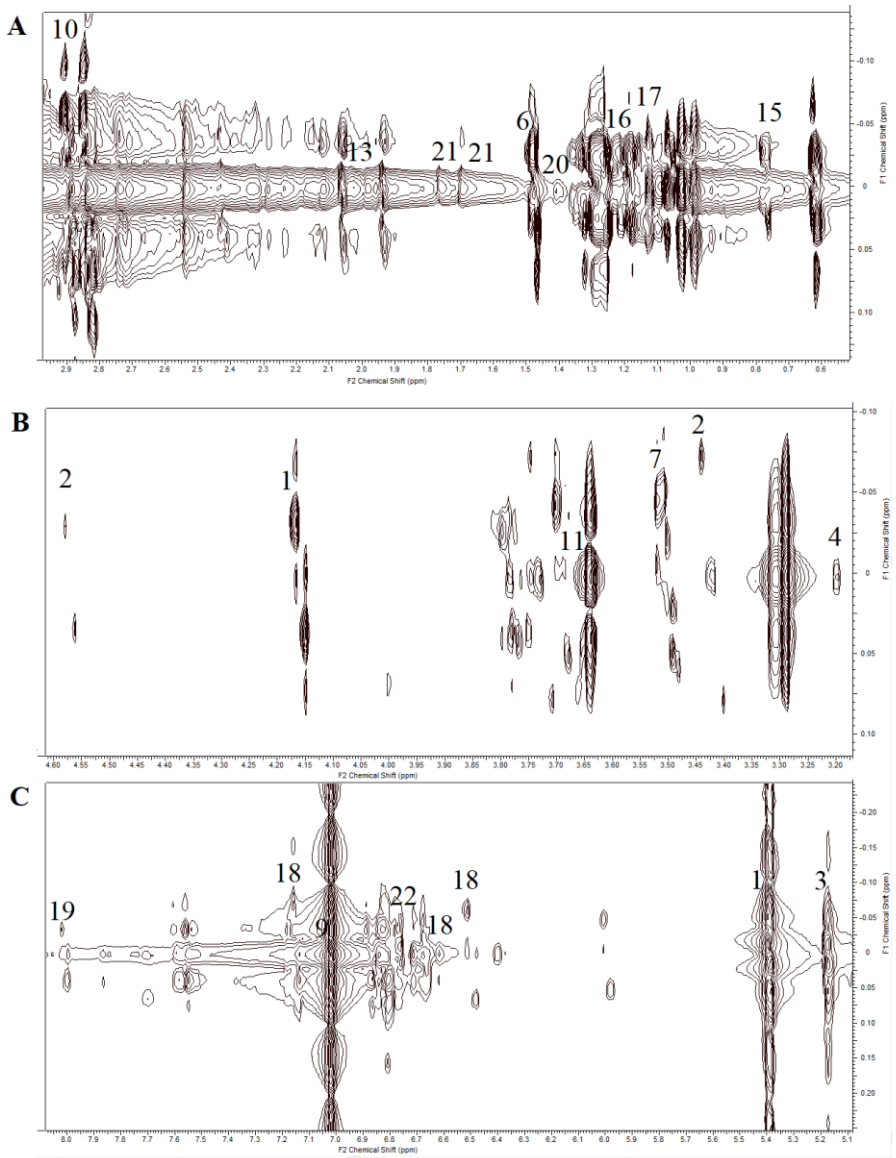


**Fig. S2**. *J*-resolved NMR spectra of oil palm leaf. In the region of $\delta$ 0.5 - 2.95 (**A**), $\delta$ 3.15 –4.60 (**B**) and $\delta$ 5.10 – 8.05 (**C**). Peak assignments: (1) sucrose, (2) xylose, (3) $\alpha$-glucose, (4) choline, (5) asparagine, (6) alanine, (7) *S*-sulfocysteine, (8) succinic acid, (9) gallic acid, (10) epicatechin, (11) indole-3-acetic acid, (12) trimethylamine, (13) *N*-acetylglucosamine, (14) *N*-acetyltyrosine, (15) $\beta$-sitosterol, (16) 2,3-butanediol, (17) lactic acid, (18) caffeic acid, (19) *p*-hydroxybenzoic acid, (20) $\alpha$-tocopherol, (21) $\beta$-cryptoxanthin, (22) kaempferol. Metabolite fingerprinting of the oil palm leaf was achieved by comparing the identified metabolite peaks with our previous work (Isha et. al., 2019).

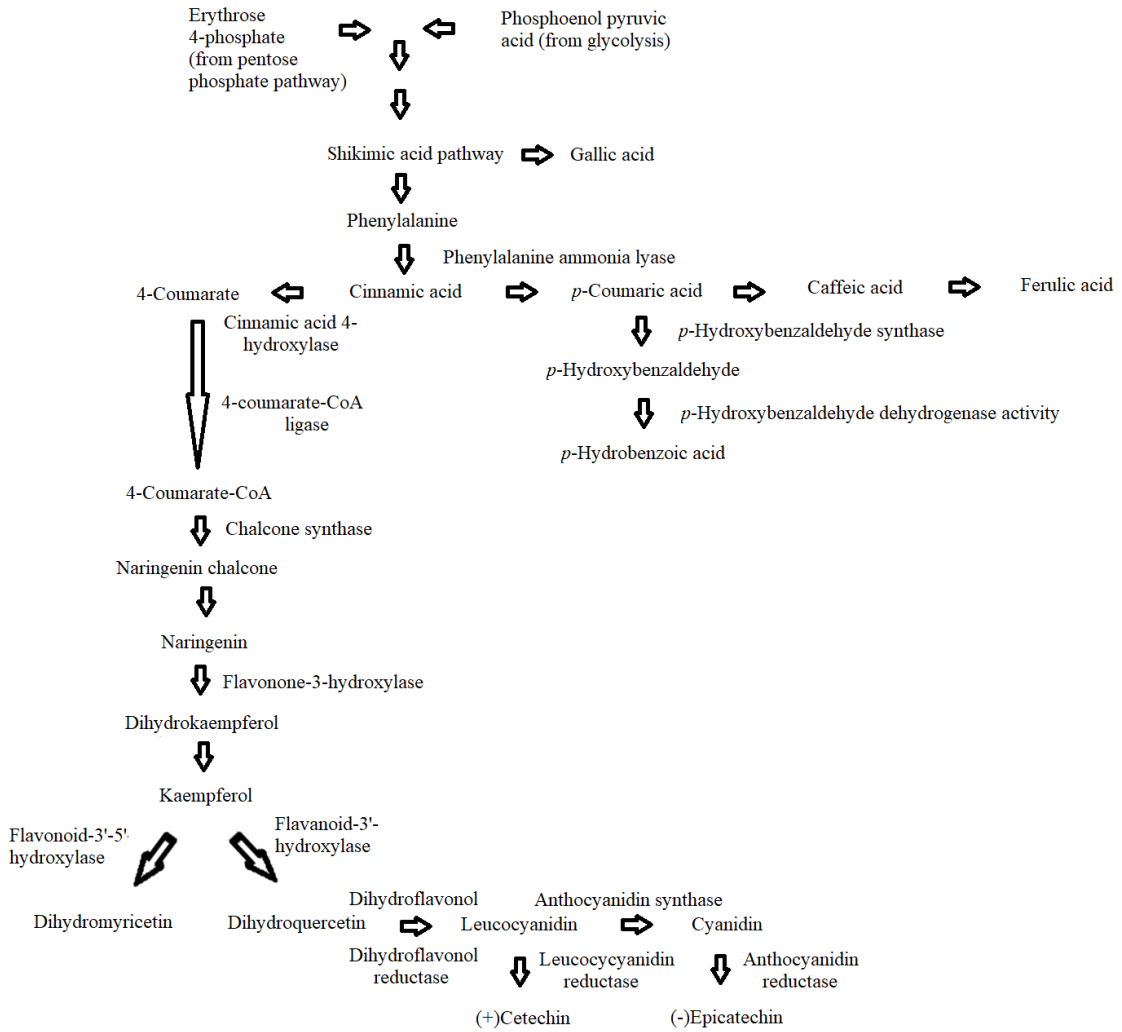


**Fig S3.** Biosynthetic pathway for phenolic acids and flavanoids branch of the phenylpropanoid. Modified from Boudet (2007), Hoffmann et al. (2004); Sircar and Mitra (2009); Gutierrez et al. (2017); Jiang et al. (2016)

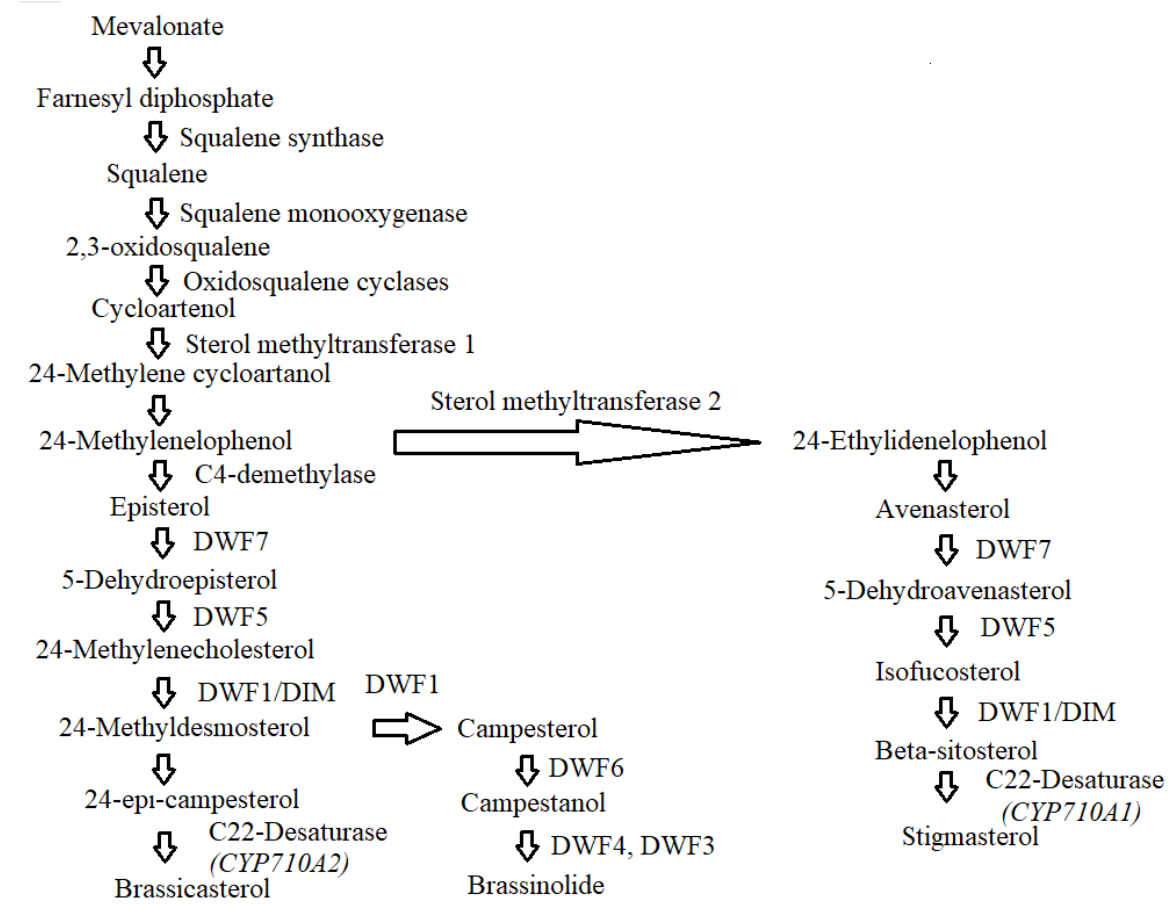


**Fig S4**. Biosynthetic pathway for plant sterols. Modified from Wang et al. (2012).

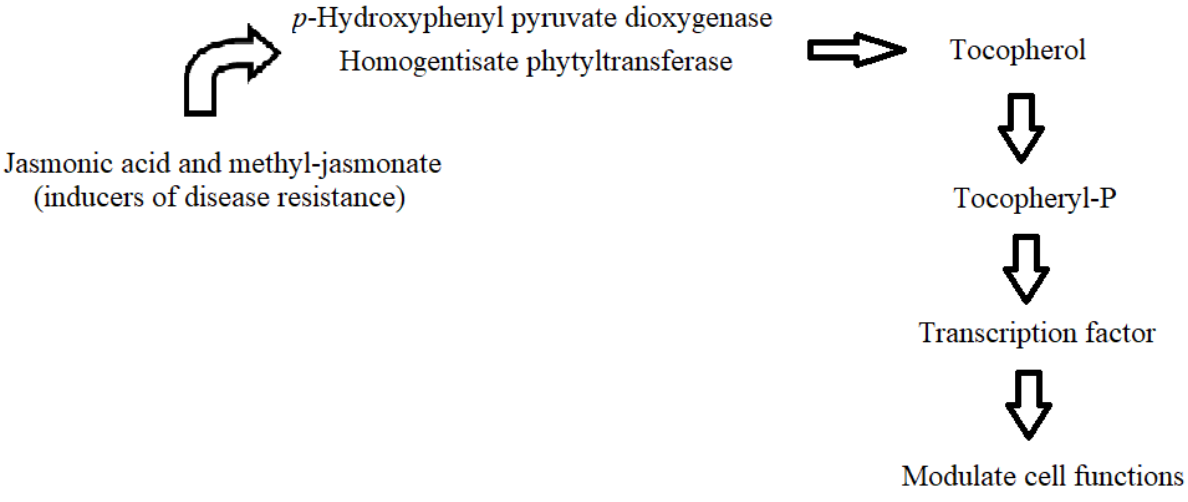


**Fig S5**. Biosynthetic pathway for tocopherol. Modified from Boubakri et al. (2016).