

Effects of Caffeine on Coffee Berry Disease (*Colletotrichum kahawae*)

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SUMMARY

In vitro effects of caffeine, theobromine, theophylline were compared with that of PDA and Octave (Prochloraz). Six isolates of *Colletotrichum kahawae* and two isolates of *C. gloeosporioides* were used in the study. 0.15% Octave and 0.5% caffeine completely and permanently inhibited mycelial growth of both species. The same amount of caffeine enhanced no sporulation. Lower rates of caffeine increased hyphal branching and reduced conidial size than theophylline and theobromine.

Conidia size of both species varied on different media. Conidial length of the pathogenic isolates was 12% larger on theophylline than that of the control plate. All isolates produced the smallest size of conidia on caffeine. 0.25% caffeine, which inhibited mycelial growth by about 92%, reduced conidial size by 30%. A similar concentration of theobromine enhanced mycelial growth of all pathogenic isolates by an average of 10% but the conidia size was reduced by 12%. The non-pathogenic isolates produced no conidia on 0.25% caffeine. However, theophylline reduced the mycelial growth rate of isolate 123 by 45% and the conidia size by 26%. The same isolate was inhibited by about 31% and conidia size was reduced by only 15%.

Colony colours were light, darker and with different intracellular pigmentation on caffeine, theobromine and theophylline than on PDA, respectively. Aerial mycelial growth of both species was vigorous on theobromine amended media.

Seeds of CBD resistant coffee selections in Ethiopia and cultivars in Kenya had higher caffeine content than the susceptible ones.