Introduction The necrotrophic fungus Pyrenophora tritici–repentis (Died.) Drechs.However, to our knowledge, the in planta production of cate- narin by parasitic fungi has not been demonstrated.Moreover, in order to clarify the possible ecological and physiological roles of catenarin produced by P. tritici–repentis, the phytotoxic and antimicrobial activities of the pigment were assessed, respectively, on wheat and a wide range of microorganisms associated with the pathogen during its saprophytic and parasitic phases of growthIn some wheat production areas, tan spot often occurs as part of a leaf–spotting complex on wheat, in conjunction with Phaeosphaeria nodorum (E. Mu?ller) Hedjaroude (anamorph: Stagonospora nodorum (Berk.) Castellani and E.G. Germano), Mycosphaerella graminicola (Fuckel) J. Schro?t.The latter condition is also associated with other fungal and bacterial pathogens, including Alternaria alternata (Fr.:Fr.) Keissl., Fusarium spp., Aspergillus spp., Cladosporium spp., and Pseudomonas syringae pv. atrofaciens (McCulloch) Young et al. [11].It was previously hypothesized that the reddish discoloration of wheat kernels associated with red smudge results from the secre- tion and accumulation of catenarin [14], an anthraquinone pro- duced by some isolates of P. tritici–repentis [14], as well as other fungi [15–19] and some plants [20].In the absence of a suitable host, P. tritici–repentis can survive saprophytically on wheat debris on the soil surface, and the incidence of tan spot has increased in recent years with the adoption of conservation tillage practices that retain crop residues [4,5].The bioactivity of catenarin also suggests that in addition to inhibiting the growth of microorganisms associated with P. tritici–repentis during its saprophytic phase [14], the pig- ment suppresses parasites accompanying the tan spot pathogen as part of the wheat leaf–spotting complex.Evidence that the pigment is produced in wheat kernels infected by P. tritici- repentis would support the hypothesis [14] that catenarin causes the red smudge symptom, and would also allow for a better as- sessment of the impact of this pathogen on seed health, processing characteristics, and food safety.On susceptible host genotypes, P. tritici–repentis differentially induces combina- tions of tan necrosis and/or extensive chlorosis.in Cohn (anamorph: Septoria tritici Roberge in Desmaz.), and Cochliobolus sativus (Ito and Kuribayashi) Drechs.

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