

In-vitro tests on the inhibitory effects of Bio-Film's Loli-Pepta™ against *Nigrospora sp.*, *Botryosphaeria sp.* and *Fusarium chlamydosporium* isolated from Mundubbera blueberry leaves.

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By Jamie Zapp (MSc, Plant path), Ryan Lester

Summary

Applications of Bio-Film's Loli-Pepta™ at concentrations of 2% and 5%, were shown to be moderately effective at suppressing the growth of *Nigrospora sp.*, *Botryosphaeria sp.* and *Fusarium chlamydosporium*. All 3 fungal pathogens were isolated from Blueberry plants sourced from the Bundaberg region. The 3 fungi were identified independently at Microgenitix by sequencing the S26 ribosomal DNA gene.

Nigrospora sp. is a common fungus which is pathogenic to plants and can cause leaf spot. *Botryosphaeria sp.* is a plant pathogen which is widespread and economically important pathogens on various fruit trees, and it often causes die-back, cankers on limbs and fruit rots. *Fusarium chlamydosporium* is a widespread plant pathogen which causes leaf wilt in a variety of plants.

Aims

To determine if Loli-Pepta™ can suppress *in vitro* mycelial growth of the *Nigrospora sp.*, *Botryosphaeria sp.* and *Fusarium chlamydosporium* isolated from blueberries in Mundubbera.

Materials & Methods

Inhibition of the pathogen *Nigrospora sp.*, *Botryosphaeria sp.* and *Fusarium chlamydosporium* by Loli-Pepta™ was determined by comparing the radial growth of the fungal pathogen on potato dextrose agar (PDA) in the presence of varying concentrations of Loli-Pepta™.

Loli-Pepta™ solutions (100ml of each) with concentrations of 2% and 5% were prepared with sterile deionised water. Then 0.1 ml of each Loli-Pepta™ solution was pipetted onto cooled PDA plates and then spread evenly onto the entire agar surface aseptically. A 9 mm diameter disc containing mycelium of the pathogens were then taken from a known culture grown on PDA. This was then placed upside down in the middle of the agar plate containing the Loli-Pepta™. After several days the growth of the pathogens was assessed by measuring the radial growth out from the fungal disc. The growth of the pathogens in the presence of the varying Loli-Pepta™ concentrations was compared and the levels of fungal suppression on the plates calculated. 3 Plates were tested at each concentration of Loli-Pepta™. The percentage inhibition compared to the water only control was tabulated from the mean values.

Results & Discussion

The growth of *Nigrospora sp.* was inhibited 73% by the application of the 2% Loli-Pepta solution, and inhibited by 92% by the 5% application of Loli-Pepta™ (Table 1). There was no inhibition (0%) of *Botryosphaeria sp.* growth with a 2% Loli-Pepta application and a moderate inhibition (66%) with a 5% Loli-Pepta™ application (Table 2).

There was a moderate (46% and 72%) suppression of *Fusarium chlamydosporium* growth at both 2% and 5% applications of Loli-Pepta.

Table 1. Suppression of *Nigrospora species* mycelial growth on agar plates by Loli-Pepta™

Treatment	3 days incubation	
	Mean ± Std Dev(mm)	% inhibition
Untreated control	40 ± 0.0	0%
2% Loli-Pepta™	11 ± 4.9	73%
5% Loli-Pepta™	3 ± 2.0	92%

Table 2. Suppression of *Botryosphaeria species* mycelial growth on agar plates by Loli-Pepta™

Treatment	3 days incubation	
	Mean ± Std Dev(mm)	% inhibition
Untreated control	25 ± 0.7	0%
2% Loli-Pepta™	25 ± 5.6	0%
5% Loli-Pepta™	8 ± 2.0	66%

Table 3. Suppression of *Fusarium chlamydosporum* mycelial growth on agar plates by Loli-Pepta™

Treatment	3 days incubation	
	Mean ± Std Dev(mm)	% inhibition
Untreated control	20 ± 2.2	0%
2% Loli-Pepta™	11 ± 6.0	46%
5% Loli-Pepta™	3 ± 3.7	72%

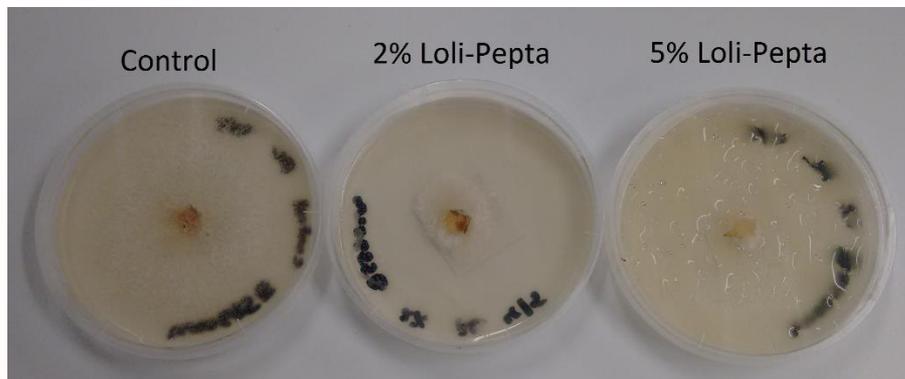


Figure 1. *Nigrospora species* challenge plate tests

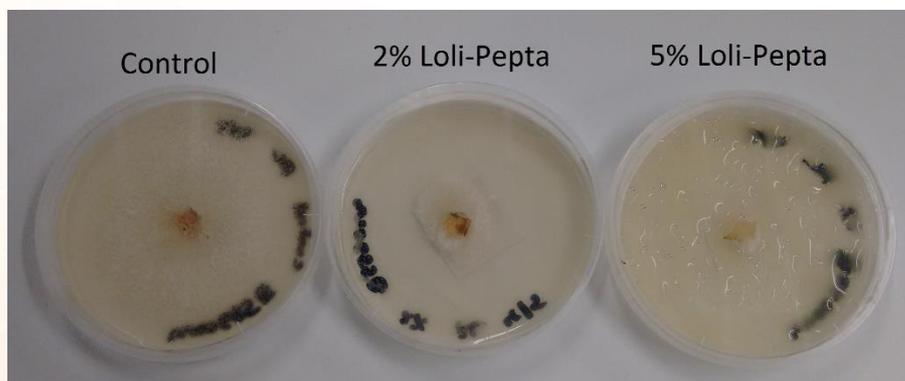


Figure 2. *Botryosphaeria species* challenge plate tests

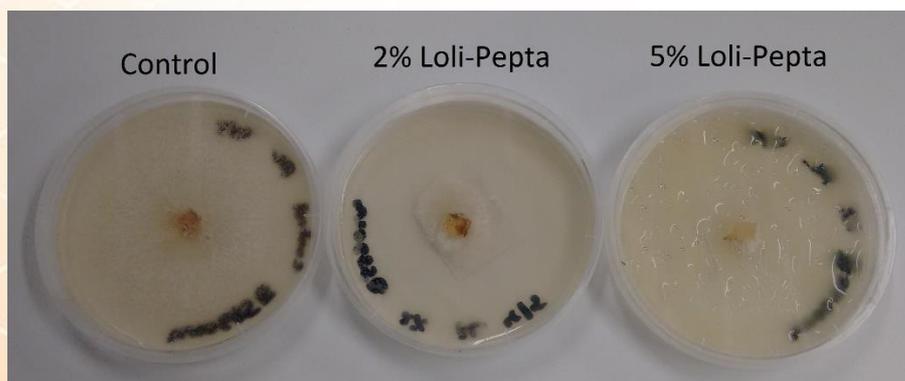


Figure 3. *Fusarium chlamyosporum* challenge plate tests

Conclusions

The higher application rate of 5% of **Loli-Pepta™** was highly effective at inhibiting the *In Vitro* growth of this *Nigrospora species*. The higher application rate of 5% of *Loli-Pepta* also significantly reduced the growth *Botryosphaeria* and *Fusarium*.