

## **Objectives and Rationale**

Cyclolipopeptides (CLP) iturin A and fengycins, produced by *Bacillus amyloliquefaciens* (DMS 23117) are potential biological fungicides. The aim of this study is to evaluate the efficacy of CLPs on fruit infected with *Botrytis cinerea* (causing grey mould on pears) and *Penicillium expansum* (causing blue mould on apples) and investigate the feasibility of using CLP as fresh fruit application.

## **Methods**

The efficacy of 10x CLP extract to control *B. cinerea* and *P. expansum* was tested either at pH 2.0 or at pH 8.0; either as edible coating (in 80% ethanol with zein as carrier or in carnauba wax). 'Packham's Triumph' pears or 'Cripps Pink' apples were inoculated with either an isolate of *B. cinerea* (Bot005) or an isolate of *P. expansum* (BD005). Fruit were treated either protectively (3 h before inoculation) or curatively (3 h after inoculation) with CLP (containing 80.7 mg/L fengycin and 1.1 mg/L iturin A); using fludioxonil as control. The iturin A concentration to inhibit 50% of mycelial growth of four *B. cinerea* isolates using the microtiter assay.

## **Key Results**

CLP application as edible coating was most effective in reducing blue mould incidence preventatively (11% control, similar to fludioxonil in edible coating), while no significant effect was found for grey mould incidence on pears. *Penicillium expansum* showed a mean reduction of 40% in lesion diameter and *B. cinerea* a mean reduction of 30-35% when CLP was applied in wax or zein edible coating at pH 8.0.

The mean iturin A EC<sub>50</sub> was 0.226 µg/L for *B. cinerea*.

## **Conclusion and Discussion**

Significant progress has been made to show efficacy of CLP extract on fruit to control *P. expansum* and iturin A efficacy against *B. cinerea* and *P. expansum* in vitro. A slight reduction of *P. expansum* incidence and a moderate reduction of severity of both blue and grey mould could be seen when CLP was applied at pH 8.0.