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Effect of inorganic salts on *Colletotrichum musae* and *Fusarium solani* - causal organisms of crown rot disease of banana

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Eight inorganic salts *viz*. Boric acid, Calcium carbonate, Calcium chloride, Calcium nitrate, Sodium bi carbonate, Sodium carbonate, Sodium chloride, Zinc sulphate were tested *in vitro* at five concentrations ranging from 0.1 to 0.5 per cent against *Colletotrichum musae* and *Fusarium solani* - the causal organisms of crown rot disease of banana. The conidial germination of both the fungi was completely inhibited by Boric acid (0.4%), Calcium carbonate (0.5%), Calcium chloride (0.5%), Sodium bi carbonate (0.4%) and Sodium chloride (0.5%). The other three salts *viz.* Calcium nitrate, Zinc sulphate, Sodium carbonate could not inhibit the conidial germination up to 100 per cent at the concentrations tested. The promising five inorganic salts, effective to inhibit the conidial germination of *C. musae* and *F. solani* were tested against crown rot disease of banana. Of the salts, Boric acid (0.4%) was found to be the most effective against the disease resulting highest crown rot reduction per cent.
The studies on textural and visual qualities and also sensory evaluation indicate that the maximum shelf life (14 days) was recorded under Boric acid (0.4%) followed by Calcium chloride at 0.5 per cent (12.5 days) against 9.5 days under control.

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Evaluation of hardening and darkening of common beans during storage by HR-MAS NMR

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Introduction: Most foods can have easily deteriorate, especially in plants it starts immediately after harvest. Thus, conservation methods are important to ensure the quality of food products.
The beans storage at relatively high temperature conditions cause the development of Hard-to-Cook and Hard-to-Shell phenomena, reducing the grain's ability to absorb water and increasing cooking time [1]. Several conditions can be used for storage, such as different temperatures and modified atmospheres. Understanding the phenomena that occur during the grain storage is important to reduce post-harvest losses.
Objectives: Use the NMR to analyze the variation in the metabolic profile of bean cultivars stored at controlled temperatures and modified atmosphere. Establishing the correlation between the metabolic variation with darkening and hardening grains proposing the best storage condition.
Materials and methods: Four recently collected bean cultivars were stored at controlled temperatures (-20, 15, 21 and 37 °C) and modified atmosphere (vacuum and nitrogen), and analyzed by ^{1}H HR-MAS NMR. The spectra were obtained in triplicate, 5 kHz spinning speed, 28 °C and 256 scans, on a Bruker Avance III 500 spectrometer.
Results: The major change in the grain metabolic profiles occurred in carbohydrates, fatty acids and oligosaccharides levels, as observed in Figure 1. It is remarkable that fatty acids increases the hydrophobicity of the grain contributing with the hardening of beans.
There was also observed variation in the phenolic compounds content, especially anthocyanins, whose oxidation minimized their content and were related to the darkening of the grain.