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Topography and mechanical properties of *Carica papaya* L cell wall after Papaya meleira virus infection

A Alberto R Fernandes

Universidade Federal do Espírito Santo, Brazil

Papaya sticky disease caused by Papaya meleira virus (PMeV) is an important papaya disease in Brazil and Mexico due the severe economic losses it causes. Studies to assess the pathogen-host interaction at a histological are fundamental in order to understand the mechanisms that underlie natural resistance. In this study we collected leaves of healthy and symptomatic papaya sticky diseased plants and observed the topography and mechanical properties of plant cell walls by atomic force microscopy (AFM). Two-dimensional images obtained from different areas of the cell wall showed that the cell walls of healthy plants are smoother than the walls of sticky diseased plants. Also healthy plants displayed higher constitutive characteristics of the cell wall than diseased plants and the average maximum adhesion force was higher on healthy plants than on diseased plants. PMeV promotes changes on cell walls making them more fragile and susceptible to breakage. These changes associated with increased water uptake and internal pressure of laticifers causes cell disruption that leads to spontaneous exudation of latex and facilitates the spread of PMeV to other laticifers. The results of this work provide new insights on the interaction papaya-PMeV which could prove helpful when trying to understand and control the papaya sticky disease.

patricia.fernandes@ufes.br

Evaluation of coelomic fluids and its clinical correlation with cytological diagnosis

Anita Bhandari

Chitwan Medical College, Nepal

Coelomic fluid aspiration is a simple technique to achieve a diagnosis which helps in narrowing the diagnostic dilemma faced by physicians. This was a prospective study conducted during January 2012 to May 2013 in the department of pathology, CMSTH, Bharatpur, Nepal. Out of 70 cases, 34 cases are of peritoneal fluid, 31 cases are of pleural fluid and five cases are of pericardial fluid. 59 cases diagnosed as chronic effusion (84.28%). Six cases are diagnosed as inflammatory effusion (8.57%) and five cases are of malignant effusion (7.14%). Out of 70 cases, 50% were turbid, 47% were clear and 2.9% were hemorrhagic. 52.9% of effusions were exudative and 47.1% of effusion was transudative. Mean glucose level of transudative effusion was 80.15 ± 21.19 mg/dl which was higher compared to exudative effusion. Mean proteins levels in transudative effusion was 2.08 ± 0.43 gm/dl. The total leukocyte count ranged from 57 to 1, 50,000 cells/mm³. The estimated Mean $\pm$ SD of all coelomic fluid cell count was 3151.5 ± 17974.06 with average cell counts in malignant, chronic and inflammatory effusion of 620 cells/mm³, 520 cells/mm³ and 31,141 cells/mm³ respectively. The estimated Mean $\pm$ SD of all transudative fluid total leukocyte count was 188.57 ± 53.65 and of exudative fluid cell count was 5793.29 ± 24576.28 . Overall sensitivity of cytology was 60%, specificity 96.92% and accuracy 94.28% while positive predictive value was 60% and negative predictive value was 96.92%. Hence, cytological study of the fluid is a complete diagnostic modality which aims at pointing out the etiology of effusion as well as in certain cases a means of prognostication of disease process.

dranitabagale@gmail.com