Bacterial Diseases

B 1

ISOLATION OF PLASMIDS OF BACTERIA *ERWINIA CAROTOVORA*, THE CAUSE OF SOFT ROT OF SOME VEGETABLE CROPS. Abeer M. Elgiblawi and Fawzi Adam, Plant Protection Department, University of Al-Fateh, Libya.

The plasmids of some bacteria play an important role in pathogenicity as well as the resistance of bacteria to some harmful chemicals. Plasmids of different strains of *E. carotovora* were isolated. There were differences among the strains *E. carotovora* pv. *carotovora*, *E. carotovora* pv. *atroseptica* and *E. carotovora* pv. *chrysanthemi* on the basis of the number and size of isolated plasmids. The number of plasmids varied from 1-4 plasmids, the smallest was 153 bp, and the largest was 1875 bp. Inspite of this variation in number and size, there was homogeneity between plasmids from isolates obtained from the same host.

B 2

SURVEY OF PATHOGENIC PSEUDOMONAS OF RASACEOUS FRUIT TREES IN CONSTANTINE REGION (ALGERIA). D. Harzallah[1] and S. Sadalla[2]. (1) Laboratory of Microbioloy, Biology Department, Faculty of Sciences, Ferhat Abbas University, Setif 19000, Algeria, E-mail. harzaldaoud@yahoo.co.uk; (2) Inspection de la protection des végétaux de Constantine, Algeria.

Fifty nine phytopathogenic pseudomonad isolates were obtained from plant samples with different disease symptoms collected from rosaceous stone and pome fruit tree orchards in Constantine region (eastern Algeria). Based on pathogenecity tests, 31 strains comparable to *Pseudomonas syringae pv. Syringae* were isolated from cherry (*Prumus avium* L.), plum (*P. domestica* L.), apricot (*P. armeniaca* L.), almond (*P. dulcis* L.) and pear trees (*pyrus communts* L.). Sixteen strains comparable to *Pseudomons viridiflava* were isolated from cherry, apricot and peach (*P. persica* L.).

B 3

EVALUATION OF CHLOROSIS DEVELOPMENT BY NUMERICAL IMAGE ANALYSIS, IN *PHASEOLUS VULGARIS* LEAVES TREATED BY TABTOXIN. S. Bouharati[1], D. Harzallah[1], F. Dahbi[2] and L. Bouamama[3]. (1) Laboratory of Microbioloy, Biology Department, Faculty of Sciences, Ferhat Abbas University, Setif 19000, Algeria, E-mail: sbouharati@yahoo.fr; (2) Algerian National Institute of Agronomical Research. Route des fermes, BP. 08, 19000 Setif, Algeria, (3) Department of Optics, Faculty of Engeneering, Ferhat Abbas University, Setif 19000, Algeria.

Tabtoxin is a non-specific phytotoxin, produced by *Pseudomonas syringae pv. tabaci* and play an important role in the development of disease symptoms.

When applied on bean leaves, it causes chlorotic lesions and reduced significantly the chlorophyll content. In this study, the development of chlorosis in *Paseolus vulgaris* leaves treated by tabtoxin, was evaluated by Numerical Image Analysis (NIA). This method was compared with classical evaluation methods (chlorophyll content and visual evaluation of symptoms). The numerical Image Analysis appeared to be a practical tool for the evaluation of chorosis development in Phaseolus leaves.

B 4

SURVIVAL OF *XANTHOMONAS CAMPESTRIS* PV. *VESICATORIA* IN SOIL, SEEDS AND PLANT RESIDUES. Azzeddin M.Y. Alawami, Department of Pant Protection, Faculty of Agriculture, Omar Al-Mukhtar University, El-Beida, Libya. E-Mail: Azzawami2002@yahoo.com

The present work was conducted to study the survival of the bacterium *Xanthomonas campestris* pv. *vesicatoria*, the causal organism of tomato spot disease, in plant debris, seeds and soil. Results revealed that the bacterial population decreased quickly in inoculated plant debris within the first 2 months, then gradually until it completely disappeared after 9 months. In seeds, the population increased within the first 3 months then decreased and disappeared after 7 months. The bacterium remained viable in the sterile soil for 8 weeks, but only for 5 weeks in non-sterile soil.

B 5

MULTIPLICATION OF *XANTHOMONAS CAMPESTRIS* PV. *VESICATORIA* IN PLANT TISSUES AND ASSOCIATED CHANGES IN MEMBRANE PERMEABILITY. Azzeddin M.Y. Alawami, Department of Pant Protection, Faculty of Agriculture, Omar Al-Mukhtar University, El-Beida, Libya. E-Mail: Azzawami2002@yahoo.com

The multiplication of the bacterium *Xanthomonas campestris* pv. *vesicatoria*, the causal organism of tomato spot disease, in plant tissues and the associated changes in permeability of cell membranes as a response to infection was evaluated. The results showed that the pathogen starts to multiply in the tissue of the susceptible host (cv. Rio-Grande) directly without any lag phase. However, a lag phase was recorded in the tissue of the resistant cv. Marmande. On the other hand, the pathogen was able to induce the typical disease symptoms only on tomato plants (cv. Rio-Grande). In non-host tissues (Tobacco) the level of multiplication decreased greatly from the second day and remained low until the end of the test. Population of the saprophytic bacterium *Pseudomonas flourecense* in tomato plant tissues (cv. Rio- Grande) decreased at a low rate within the first 24 hours. The rate of increase in electrolyte leakage (as an increase in permeability) in susceptible

host tissues three days after inoculation was almost 50% of that in resistant cultivar. However, six days later the reverse was true. In non-host tissue, electrolyte leakage was high at the beginning but dropped continuously to be less than in the other tissue types. The saprophytic bacterium, on the other hand, caused very little permeability changes in tomato tissues.

B 6

STUDY OF THE CAUSAL AGENT OF GERANIUM LEAF SPOT IN BEIDA CITY, LIBYA. N.A. Ramadan[1], N.T. Younis[1] and N.A. Mohamed[2]. (1) Biology Department, Science College, University of Mosul, Iraq; (2) Agriculture College, Omar Al-Mokhtar University, Libya.

The study showed that Geranium leaf spot disease which occurred at Omar Al-Mokhtar University gardens, El-Beida city is caused by two species of bacteria belonging to the genus *Corynebacterium* that were identified as *C. kutscheri* and *C. xerosis*. This study constitutes the first record of this disease in Libya. The anti-bacterial activity of streptomycin at a concentration of 10 ppm on the two species of bacteria gave inhibition zones of 9.3 and 7.2 mm diam, respectively, whereas the antibiotic balkacyline produced inhibition zones of 6 and 5 mm with *C. xerosis* at concentration of 250 and 100 ppm, respectively.

B 7

CHARACTERISTICS OF FLUORESCENT PSEUDOMONAS ISOLATED FROM CITRUS PHYLOSPHER AND THEIR ANTAGONISTIC ACTIVITY AGAINST *XANTHOMONAS AXONOPODIS* PV. *CITRI.* Gholam Khodakaramian, Department of Plant Pathology, College of Agriculture, Tarbiat Modarres University, P.O. Box 14155-4838, Tehran, Iran, E-mail: Khodakaramian@yahoo.com

Citrus bacterial canker in southern Iran is a serious disease caused by *Xanthomonas axonopodis* pv. *citri* and *X. axonopodis*. The pathogens can which they could be differentiated by host range and AFLP fingerprinting. A total of 80 strains of fluorescent pseudomonads were isolated from citrus phylosphers and characterized by FAMEs analysis and phenotypic features determination. Isolated fluorescent pseudomonads strains were identified as *Pseudomonas putida* biovar B, *P. fluorescens* biovars 1, 3 and 5 and *P. viridiflava*. By comparison of the protein electrophoretic patterns of the isolated fluorescent pseudomonads isolates, twenty representatives were selected. These representatives were examined for their antagonistic activity towards *X. axonopodis* pv. *citri* in vitro by measuring their inhibition zone and ability to produce antibiotic and siderophore. Some of the representative isolates could produce antibiotic and siderophore and they inhibited the growth of X. *axonopodis* pv. *citri* in-vitro. Based on the results of in-vitro

experiments, five isolates were selected and one concentration was applied in a complete randomized block design under greenhouse conditions. Results showed that most of the applied isolates could reduced citrus canker disease incidence caused *X. axonopodis* pv. *citri*, and the reduction ranged from 10.39 to 54.93%.

B 8

A STUDY ON MICROBIAL SPOILAGE OF SOME LOCAL DATES. A.M. Al-Rawi. Biology Department, Science College, University of Mosul, Mosul, Iraq.

The study involved isolation and identification of microorgansims causing microbial spoilage of Iraqi dates. Samples of some dry and soft dates such as Al-Kustawi, Al-Berhi and Al-Zuhdi were collected. Morphological, physiological and biochemical tests were conducted to identify the isolated microorganisms. The results showed that spoilage of soft dates is associated with *Lactobacillus* and *Streptococcus* whereas, *Micrococcus* and *Bacillus* were associated with dry dates. In addition, *Saccharomyces rouxii* and *candida* sp. were associated with spoiled soft and dry dates.

B 9

A STUDY ON SOFT BACTERIAL SPOILAGE OF SOME VEGETABLES. A.M. Al-Rawi, Biology Department, College of Science, Mosul University, Mosul, Iraq.

The study involved isolation and identification of bacteria causing soft spoilage of some vegetables such as cucumber, cabbage and potato. Local samples of damaged vegetables were collected. Physiological and chemical tests were carried out on these samples to identify the causal organism. Results revealed that the samples were infected with bacteria capable to hydrolyse pectin and cause spoilage. The results also indicated that *Erwinia carotovora* was the most abundant bacterium in cucumber and cabbage, whereas *Pseudomonas* was isolated more commonly from potato samples.

B 10

PLANTS RESPONSE TO INFECTION WITH CROWN GALL BACTERIA. Najwa I.K. Al–Barhawi, Biotechnology Unit, Biology Department, Education College, Mosul University, P.O. Box 11298, Mosul, Iraq.

Crown galls were formed on the explants (stems and leaves) and hypocotyledon stems, of the seedling of three legume plants (*Vicia faba, Vigna unguiculata* and *Pisum sativum*), and four non–legume plants (*Apium gravealens, Lycopersicon esculentom, Gossypium* sp. and *Lepidium sativum*) after two weeks of growth and infection with *Agrobacterium tumefaciens* (A6 Binns strain), on solid Murashige and Skoog (MS) medium, free of growth regulators. The results

showed that the species of infected plants, influenced the crown galls size which varied between 1 and 5 mm, on the seedlings of *L. sativum* and *Pisum* sp., respectively. Moreover, 95% of these seedlings, responded to infection with *A. tumefaciens* by crown gall formation, in comparison of its formation on the other plants.

B 11

EFFECTS OF 10.5 GHZ MICROWAVE RADIATION ON SOME BIOLOGICAL ACTIVITIES OF TWO SPECIES OF *STAPHYLOCOCCUS* BACTERIA. Saba A.S.H. Al-Sultan[1], Tayma N.Al-Ghulami[2] and Ramzia H.A. Rahman[1]. (1) Section of Medical Biology, Department of Anatomy, College of Medicine, University of Mosul, Iraq; (2) Section of Medical Physics, Department of Physiology, College of Medicin, University of Mosul, Iraq.

In this work, 18 hours pure BHI broth cultures of *Staphylococcus aureus* (coagulase positive) and *Staphylococcus saprophyticus* (coagulase negative) were subjected to microwave radiation at 10.5 GHz of 15 mW for 15, 30, 45, 60, 75, 90, 105 and 120 minutes, respectively. The aim was to know whether microwave radiations have an effect on some vital biological activities including sensitivity test and some routine diagnostic tests such as Catalase, Oxidase, and Slide coagulase tests. Results indicate that the most important effect of microwave radiation was on the sensitivity test of coagulase negative *S. saprophyticus* (CNS) more than its effect on coagulase positive *S. aureus* (CPS). The (CNS) bacteria changed from being sensitive as in the control sample to resistant at 15.75 min for Amicacin (30 µg) and at 45 min for ceftriaxone (30 µg) and at 75 min for Gentamicin (30 µg). In contrast, these bacteria were more sensitive to some antibiotics due to microwave exposure. Most important is its transformation from being resistant to Cefoxitin (30 µg) to sensitive at 75 min exposure time. Also, Catalase test of both types of bacteria has changed from being positive to negative at exposure times of (30 and120 min.) of (CPS) bacteria and 120 min of (CNS) bacteria. Another effect of microwave radiation is the change in the results of Slide coagulase test from positive of (CPS) bacteria to negative at exposure time of 30 min. Finally, the microwave radiation had an effect on Oxidase test for both types of bacteria.