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Pilot study of hepatitis B immunization in healthcare workers

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Objective: We have performed this study to: Evaluate the prevalence of hepatitis B virus surface antigen (HBsAg) and antibody to hepatitis C virus (anti-HCV) in health care workers at start of the study and after 5 years to evaluate the risks of seroconversions; and evaluate the rates of antibodies titer in HCWs both after HBV immunization and after 5 years from vaccination.

Methods: The study included 302 health care workers in Mansoura University Children hospital, Egypt from December 2009 till February 2015. HCWs receive vaccination for HBsAg and the states of antibodies titer for HBsAg were evaluated after complete vaccination and after 5 years. Also the anti-HCV and HBsAg were determined by immunoassay at start of the study and after 5 years.

Results: Ninety percent of HCWs developed anti-HBsAg above 10 mIU/ml. The non-responsive of HCWs was 10%, and HCWs with levels between 10-100 mIU/ml were 21.7%. The results of HCV IgG and HBsAg among HCWs at the start of the study were 4.3% and 0.7% respectively. After 5 years, the rates of HCV IgG and HBsAg were 18.2% and 4.4% respectively. The seroconversion rates showed around four folds increase in HCV IgG and six folds increase in HBsAg; the increase was highly significant ($P=0.0001$, $P=0.006$ respectively). The presence of protective antibodies titer after five years for anti-HBs was 59.8%. HCWs that had less 10 mIU/ml anti-HBs were 40.3%, HCWs who had levels between 10-100 mIU/ml were 14.5% and HCWs with levels more than 100 mIU/ml were 45.3%.

Conclusions: The present study highlights an important finding among some Egyptian health care workers. There is good response for hepatitis B vaccination after primary vaccination; however, there are some non-responders and hyporesponders so the evaluation of antibodies levels after vaccination is important for application of revaccination or/and booster dose application for achieving of utmost protection level. The decline of antibodies level after 5 years is remarkable necessity for the evaluation of health care workers for antibodies levels for booster dose administration. The seroconversion for hepatitis C and B viruses were significant among our health care workers. Strict adherence to infection control guidelines should be implanted.

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Enhancement of vancomycin susceptibility of *Pseudomonas aeruginosa* by dicarboxylic acids from caper leaves

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Plant-derived antimicrobial compounds can be potentially used as novel tools to preserve food or to decrease the antibiotic resistance of bacteria. Caper (*Capparis spinosa*) offers a natural promising alternative for food safety and bioconservation. In this work, the methanolic extract of caper leaves was tested for the ability to inhibit the growth of a range of microorganisms. This extract was found to be more effective against *Pseudomonas aeruginosa* at 225 µg/ml than other organisms as proved by the broth microdilution method. Organic acids from MCL were then extracted with a mixture of water-ethanol (50/50 v/v). *P. aeruginosa* growth inhibition was recorded for malic acid, malonic acid, succinic acid, p-Coumaric acid at 450 µg/ml while benzoic acid was active at 225 µg/ml. The antimicrobial activity of the latter compounds and oxalic acid used as chemical control in combination with antibiotics was studied using checkerboard methods and fractional inhibitory concentration (FIC) against *P. aeruginosa*. FIC_{index} values were then calculated to characterize interactions between the inhibitors. Malic acid and oxalic acid were found highly effective in increasing the susceptibility of *P. aeruginosa* to vancomycin (FIC_{index} = 0.37 and 0.50, respectively) suggesting the possible use of dicarboxylic acids from caper leaves as natural antimicrobials against *P. aeruginosa*.

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