

ABSTRACT

The group *Wolbachia* has prompted research regarding its potential for the control of diseased vectors including *Anopheles* and *Aedes*, which transmit plasmodium and dengue viruses respectively. *Wolbachia* is the intracellular gram negative bacteria which is maternally inherited endosymbiont that belongs to class Alphaproteobacteria of order Rickettsiales. The genus was first recognized in a common house mosquitoes *Culex pipiens* in 1924 by Marshall Hertig and S. Burt Wolbach. It is one of the world's most common parasitic microbes and is possibly the most common reproductive parasite in the biosphere, found in more than 65% insects naturally. It has a great potential to induce reproductive changes in the hosts such as; cytoplasmic incompatibility (CI), parthenogenesis induction (PI), feminization or male killing due to the ability to modify the reproductive success of its host. The current study was conducted to investigate *Wolbachia* infection in somatic and germ line tissues of different insects by staining (Gimenez and SYTO 11) and to screen (identification and Characterization) *Wolbachia* locally isolated Strains by PCR using gene specific primers (wsp: *Wolbachia* surface protein). For this purpose different insects were collected from various sites of Lahore and Faisalabad during spring season by hand collection method and by using aspirator i.e. *Drosophila melanogaster*, Termites (*Isoptera*), *Culex* mosquitoes, Spiders (*Oxyopes salticus*), Flour beetles (*Tribolium castaneum*) cockroaches (*Blattella*) and White flies (*Bemisia Tabaci*). *Wolbachia* was detected in both reproductive and non-reproductive tissues of insects. Overall expression of *Wolbachia* was highest in ovaries, good in head, gut and malpighian tubules, and poor in testes. PCR by using specific gene primers and staining (Gimenez and SYTO 11) were found cost-effective method to investigate and screen *Wolbachia* from different insects. It would be potential tool, especially for the screening of large number of insect samples and beneficial in laboratories where advance facilities (such as Western blot, Dot blot hybridization and cell culture techniques) are not available. Local strains of *Wolbachia* (wMel and wRi) could be tested for their potential to be used as effective biological control