ABSTRACT

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Title of the thesis: Progress studies on production of anti-HCV vaccine in transgenic plants using advanced molecular genetic techniques.

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Hepatitis C virus (HCV) is the major etiologic agent of blood transfusion–associated and sporadic non-A non-B hepatitis affecting more than 180 million worldwide including nearly 4 million in the united states. Vaccine development for HCV has been difficult and there is no vaccine or effective therapy against this virus. In this research, we describe the development of an experimental plant-derived subunit vaccine. Our subunit vaccine originates from a consensus HCV HVR1 epitope (R9) that antigenically mimics many natural HVR1 variants. This HVR1 sequence was cloned into the open reading frame of ALMV CP, the chimeric ALMV-RNA4 containing sequence encoding R9 epitope was introduced into full-length infectious ALMV-RNA3 that was utilized as an expression vector. This recombinant chimeric protein is expressed in transgenic tobacco plants (P12) expressing ALMV- RNA1 and 2. Plant –derived HVR1/ALMV CP reacted with HVR1and/or ALMV CP -specific monoclonal antibodies and immune sera from individuals infected with virus and not with normal human sera. Using plant-virus transient expression to produce this unique chimeric antigen will facilitate the development and production of an experimental HCV vaccine. A plant derived recombinant HCV vaccine can potentially reduce expenses normally with production and delivery of conventional vaccines. A primary random survey for HCV distribution in Cairo and Giza governorates in Egypt was done during years 2000-2001. 3400 donors of age ranging between 20 and 50 years old were examined. Blood samples were tested using Nested RT-PCR assay.

Key words: Hepatitis C virus (HCV), transgenic tobacco plants (P12), consensus HCV HVR1 epitope (R9), chimeric ALMV-RNA4 and Nested RT-PCR.

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