

		
		<p>كلية العلوم مكتب العميد</p>
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<p>Humoral immune responses of the native honeybee, <i>Apis mellifera jementica</i>: towards developing natural antibiotics against infectious food-borne diseases</p>	<p>Native mosquito larvicidal bacteria as new candidates for control of mosquito-borne diseases in Saudi Arabia</p>	<p>اسم المشروع</p>
<p>The current project aims primarily at exploring the humoral immune responses of the larval stage of the Saudi native honeybee, <i>A. m. jementica</i>, and then at developing, purifying, identifying, sequencing and characterizing candidate immune peptide(s) for use against diseases of bees and humans (<i>P. larvae</i> and <i>S. enteritidis</i>, respectively). The resultant effective antibacterial immune peptides against <i>P. larvae</i> and <i>S. enteritidis</i> will be evaluated and verified for use as new</p>	<p>The objectives underlying the research described here are to investigate and develop mosquito vector control strategies that rely on the effectiveness of native bacterial isolates as mosquito biolarvicidal agents. These bacteria/bacterial products will be tested against larvae of a known insecticide-resistant filarial vector <i>Cx. pipiens</i> and the Rift Valley vector <i>Ae. caspius</i> in.. Achieving these</p>	<p>أهداف المشروع</p>

<p>therapeutic agents, or as model compounds for rational design of artificial antibiotics. Thus, this study will focus on four objectives related to the humoral immune responses of the larval stage of the native Saudi honeybee, <i>A. m. jementica</i>:</p> <ol style="list-style-type: none"> <li>1. Induction of humoral antibacterial immune responses;</li> <li>2. Molecular investigation of the potentially effective antibacterial immune peptides against <i>P. larvae</i> and <i>S. enteritidis</i>;</li> <li>3. Verifying the purified antibacterial immune peptides against <i>P. larvae</i> and <i>S. enteritidis</i> as antibiotic candidates</li> </ol>	<p>objectives is summarized as follows:</p> <ol style="list-style-type: none"> <li>1- Rearing experimental mosquitoes.</li> <li>2- Raising native larvicidal <i>B. thurengiensis</i> bacterial isolate(s).</li> <li>3- Raising entomopathogenic nematodes and their bacterial symbiont(s).</li> <li>4- Conducting larvae toxicity bioassays (LC<sub>50</sub> and LC<sub>90</sub>).</li> <li>5- Testing the histopathological effects of the larvicidal native bacterial isolates on larval midgut.</li> </ol>	
<p>National Plan for Science, Technology and Enovation at King Saud University</p>	<p>National Plan for Science, Technology and Enovation at King Saud University</p>	<p>الجهة الممولة</p>
<p>This project proposes for the first time the purification and characterization of antibacterial peptides from the haemolymph of larvae of the Saudi native honeybee <i>A. m. jementica</i> that might be effective against the bee's pathogenic bacterium, <i>P. larvae</i> and the human pathogenic bacterium, <i>S. enteritidis</i>. Thus, we expect identifying immune factor(s) as candidate insectant peptide antibiotic(s) against these diseases which may encourage the beekeeping industry and vertical farming as well as public health in Saudi Arabia. We assume that the outcome of this research project may contribute</p>	<p>This project proposes for the first time isolating native larvicidal bacterial strains, a laboratory dedicated to cutting-edge technology in the field of biological control, which will be more suitable for bio-controlling the Saudi mosquitoes in the Saudi environment. This will subsequently reduce the chance of spreading the mosquito-borne disease amongst the Saudi community.</p>	<p>قيمة المشروع</p>

<p>in industrial production of new natural antibiotics for medical us.</p>		
<p>Saudi bees immune responses have been explored and some immune peptides have shown antibacterial effects against the targeted bees and humans pathogens (<i>P. larvae</i> and <i>S. enteritidis</i>, respectively). This may, in fact, indicate that natural antibiotic agent against these bees and human diseases may could be developed and commercially produced as a natural safe treatment.</p>	<p>Around 63 Bt isolated were identified, 23 out of them are mosquitocidal. Some of these isolated have showed higher mosquitocidal activities compared to the commercially produced ones.</p>	<p>أهم النتائج</p>
<p>This project could lay the groundwork for future development of more protective insect-derived antibiotics to overcome conventional antibiotic resistance of bees' and human pathogens. We expect patent(s) of insect-derived antibiotic candidate(s) against bees diseases and human <i>Salmonellosis</i> out of this study, which may contribute to improving the beekeeping industry and vertical farming as well as public health in Saudi Arabia, and possibly worldwide. Finally this 2-years project will help us to develop and retain national manpower and expertise in Apiaries and health sciences research, and establish a research laboratory dedicated to the development of future long-term work and international collaboration for developing therapeutic natural antibiotics for apiarian and human health.</p>	<p>In the Kingdom of Saudi Arabia (KSA), there are a number of different types of mosquitoes transmitting different types of life-threatening diseases within the Saudi community, like Malaria, dengue fever, and Rift Valley Fever. This study my establish an effective biocontrol method that will eliminate the vectors but at the same time maintain a clean and safe environment. Finally this 2-years project will help us to develop and retain national manpower and expertise in medical Entomology and health sciences research, and establish a research laboratory dedicated to the development of future long-term work and international collaboration for developing eco-friendly mosquito biocontrol measures in KSA.</p>	<p>علاقة المشروع بالمجتمع</p>