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• 計畫中文名稱	霍沙門氏菌線毛的表現及線毛在診斷及疫苗發展上的應用	
• 計畫英文名稱	of Salmonella enterica serotype Choleraesuis fimbriae and Application of the Fimbriae in Diagnosis and Vaccine Development	
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• 英文關鍵字	Salmonella Choleraesuis; Fimbriae; Vaccine; Diagnosis	
• 中文摘要	<p>沙門氏菌為革蘭氏兼性厭氧桿菌，為重要的食因性病原菌。與許多腸道桿菌一樣，沙門氏菌在體表外會產生毛髮狀的蛋白質結構物，稱之為線毛。線毛可吸附在宿主的黏膜細胞，進而使細菌聚集，通常這是造成感染的第一步。豬霍亂沙門氏菌是感染人類及豬隻的重要沙門氏菌病原，基因體內含有至少十五種以上不同類型線毛的基因組。本研究將會利用迴腸彎結紮模式，將細菌接種至腸腔內，模擬實際感染情形後，再利用流式細胞技術，偵測線毛在細菌體外表現的情形。能在細菌體表產生的線毛類型將是發展疫苗的重要成分。各類型線毛的線毛結構單位融合蛋白會混合在一起，當做多價疫苗使用，並利用實驗動物偵測此疫苗的免疫原性。另外，在診斷沙門氏菌方面，由於有些線毛結構單位的氨基酸序列相當專一，並不常見於其他的細菌種類，可能可以當做為診斷沙門氏菌的標的基因。我們發覺 stdA gene sequence 在 N-terminal end 的 aminoacid 只存在 Salmonella species，而不存於 non-Salmonella strains。針對 stdA gene 設計引子可增幅一段 513-bp DNA fragment，具有專一性，可做為偵測 Salmonella 的標的基因。後續會利用不同的沙門氏菌血清型以及其他的細菌，以聚合酶素鏈鎖反應方式以及點墨雜交反應，確認這項初步的發現。本研究計畫會在豬霍亂沙門氏菌線毛的表現、診斷上的應用、以及疫苗發展方面，做深入的探討。</p>	
• 英文摘要	<p>Abstract Salmonella species are gram-negative, facultatively anaerobic rods and are important food-borne pathogens. Like other members of the family Enterobacteriaceae, Salmonella produce hair-like protein structure called fimbriae on the outer membrane of the cell. Fimbriae enable bacteria adhere to host epithelial cells and is usually a prerequisite for infection. Salmonella enterica</p>	

serotype Choleraesuis is an important pathogen for both human and swine. The genome of this pathogen possesses at least 15 different gene clusters that may involve in fimbrial production. This research will investigate the expression of each fimbrial in vivo, using ligated ileal loop model, by flow cytometry. The fimbriae that will express on the outer membrane of S. Choleraesuis will be considered as an important component of a vaccine. The fusion protein of fimbrial major subunit will be mixed as a cocktail and used as a polyvalent fimbrial vaccine. The laboratory animals will be used to test the immunogenicity of this vaccine. In addition, our pilot study indicates that some amino acid sequences of S. Choleraesuis fimbrial gene cluster are conserved among Salmonella species but are absent in other bacteria. These genes could be used as the target genes for Salmonella diagnosis. Further studies using polymerase chain reaction and dot hybridization reaction to detect the presence of these unique sequences in different Salmonella serotypes and non-Salmonella bacteria will be conducted. This research intends to investigate the expression of different S. Choleraesuis fimbriae and explore the application of fimbriae in diagnosis and vaccine development.