

RESEARCH PROJECTS COMPLETED 2006	Date Completed
<p>Dr. G. Fasenko University of Alberta</p> <p>‘A microbiological assessment of cleaning methods and disinfectants for broiler barns’</p> <p>Consumer concerns over food safety have increased over the past several years and poultry producers have developed on-farm food safety programs in part to address these concerns. However, very little is known about the effectiveness of current cleaning and disinfection procedures in broiler barns. The objectives of this study were to: (i) test the effectiveness of standard cleaning procedures in lowering overall and pathogenic bacteria counts and (ii) examine the effectiveness of two widely used disinfectants. These objectives were achieved in four experiments. In June 2004 the SCIDF Board approved \$8,900 in funding for this project. The Alberta Chicken Producers, the Alberta Livestock Industry Development Fund and the University of Alberta also provided funding for this project. The major findings of the study were as follows;</p> <ul style="list-style-type: none"> - there were more bacteria in barn corners than in other locations even after all cleaning and disinfection was finished illustrating that special attention should be given to particular barn locations. - the litter removal and washing steps resulted in lower counts of the group of bacteria that cause food poisoning. - disinfectants are more effective when litter removal and cleaning is performed prior to their application. - Proquat® and Virkon® were equal in their ability to reduce the number of bacteria on metal and cement but Proquat® performed better on wood surfaces. - Both cement and metal surfaces had lower numbers of bacteria than wood surfaces. <p>Two peer reviewed publications are expected from this research and the findings were presented at an international conference by the student who worked on the project.</p> <p><i>Journal Articles:</i></p> <p><u>Journal of Applied Poultry Research</u>, 2006, 15:326-332 A Microbiological Assessment of On-Farm Food Safety Cleaning Methods in Broiler Barns</p>	2006/10/31

<p>Dr. S. Sharif University of Guelph</p> <p>‘Gut microflora manipulation for control of food-borne pathogens in chickens’</p> <p>Antibiotics are frequently used in commercial poultry production to prevent bacteria infections and to promote growth and performance. This practice could result in the development of resistance to antibiotics in bacteria including Salmonella and Campylobacter residing in the gut. These two pathogens account for over 90% of all food poisoning cases worldwide. The main objective of the study was to determine if the chicken gut microflora could be manipulated with commercially available prebiotics/probiotics to effectively control and reduce Salmonella burden in the gut and determine if there are any effects on the immune system. The project was approved in July 2004 for \$28,200 over three calendar years. Dr. Sharif also received funding from the Ontario Ministry of Agriculture and Food, the Poultry Industry Council, NSERC and Agriculture and Agri-Food Canada for this project.</p> <p>The study determined that probiotic products could significantly reduce salmonella in the cecum, that the prebiotics used in the study when used alone or in combination with probiotics were not effective in reducing salmonella and that one probiotic product significantly enhanced systemic antibody response but had no effect on antigen-specific antibodies in the gut. The same probiotic product significantly enhanced natural antibodies in serum and intestinal contents. The study resulted in published articles in two refereed journals and several presentations at conferences and industry meetings.</p>	2006/11/07
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Journal Articles:

Clinical and Diagnostic Laboratory Immunology

Modulation of Antibody-Mediated Immune Response by Probiotics in Chickens
<http://dx.doi.org/10.1128/CDLI.12.12.1387-1392.2005>

Clinical and Vaccine Immunology

Probiotics Stimulate Production of Natural Antibodies in Chickens
<http://dx.doi.org/10.1128/CVI.00161-06>

Dr. S. Sharif
University of Guelph

2006/11/17

‘The impact of *in ovo* vaccination on vaccine efficacy and development of the chicken immune system’

In ovo vaccination is used throughout the world for the delivery of vaccines especially Marek’s disease yet there is little scientific information available on the ways that *in ovo* vaccines could confer immunity. *In ovo* vaccines are usually delivered at day 18 of embryonation when the chick’s immune system is not able to fully respond to foreign antigens, thus there is also the possibility that the vaccine could have a negative impact on the chick’s immune system after hatch. The primary objective of the study was to study the impact of *in ovo* vaccination on the chick’s immune system. The second objective of the study was to determine the appropriate dose of Marek’s disease vaccines since there is no information available on the efficacy of reduced doses of the vaccine and it is apparently common practice to dilute Marek’s disease vaccines. The project was approved in July 2004 in the amount of \$20,000 over three calendar years. Dr. Sharif also received funding from the Ontario Ministry of Agriculture and Food and the Poultry Industry Council for this project. The study had the following major findings;

- *in ovo* vaccination for Marek’s disease does not have a negative impact on the chick’s immune system.
- Marek’s disease vaccine doses below the recommended dose may lead to the breakdown of immunity against the disease.
- all chicks in a flock should be vaccinated against Marek’s disease because the vaccines are not effective in containing the transmission of the virulent Marek’s disease virus.

During the course of the study, several immunological correlates of immunity against Marek’s disease that may result in the development of more efficacious vaccines were identified. The results of this study were presented at three scientific conferences and resulted in two journal articles in refereed journals.

Journal Articles:

Journal of Virological Methods 133:34-40

Development of a real-time PCR assay using SYBR Green chemistry for monitoring Marek’s Disease Virus genome load in feather tips. M.F. Abdul-Careem, B.D. Hunter, É. Nagy, L.R. Read, B. Sanei, J.L. Spencer and S. Sharif (2006).
<http://dx.doi.org/10.1016/j.jviromet.2005.10.018>

Vaccine 25(3):424-32

Cytokine gene expression patterns associated with immunization against Marek’s disease in chickens. M.F. Abdul-Careem, B.D. Hunter, P. Parvizi, H.R. Haghghi, N. Thantrige-Don and S. Sharif (2007).
<http://dx.doi.org/10.1016/j.vaccine.2006.08.006>