ASX/Media Announcement

Successful Imugene Trial Achieves 7% Growth Gain in Poultry

5 August 2004, Sydney: Recently completed CSIRO trials of Imugene's (ASX:IMU) poultry productivity enhancer have confirmed high level efficacy with weight gains of at least 7 percent. No birds died with Imugene's product whilst three birds died from the control groups.

The trial of 500 chickens in 10 groups showed the four groups given Imugene's product outperformed all other groups. Birds treated with Imugene's poultry productivity enhancer were larger than control birds by at least 7 percent, or 130 grams per bird. The increased growth rates for the four groups treated with Imugene's poultry productivity enhancer were all statistically significant. Feed conversion rates between all the groups were similar. A trial summary is attached to this release.

"This trial confirms that boosting chickens' immune systems results in improved weight gains. The results from this trial are the best we have seen to date," stated Dr Warwick Lamb, Managing Director of Imugene.

"Productivity enhancers or growth promotants are an important product sector of the poultry industry. Antibiotic growth promoters currently account for US$450 million in annual global sales to poultry producers. Imugene's product has the potential to significantly increase this market size, as it is capable of protecting against both bacterial and viral diseases in poultry. Antibiotics can only treat bacterial diseases," said Dr Lamb.

Antibiotics are currently added to poultry feed as growth promotants to protect birds against bacterial infections to avoid production losses. The incidence and severity of disease in production poultry increases with higher stocking density, dietary changes, ventilation and stress. Profitability for the producer is seriously reduced by disease which causes reduced feed intake, costs for drugs, feed medication and additional husbandry labour costs.

Imugene's novel poultry productivity enhancer boosts a natural component of a chicken's immune system, a cytokine known as gamma interferon. Boosting the bird's immune system increases resistance to a range of bacterial as well as viral infections. Protection is provided for both gastrointestinal and respiratory diseases.

Imugene's poultry productivity enhancer has significant benefits over antibiotics and antimicrobial chemicals. In-feed antibiotics are only effective against gastrointestinal and

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respiratory bacterial diseases and do not provide any protection against viral diseases. Antimicrobial chemicals that are not absorbed from the gut do not provide any protection against bacterial or viral infections of the respiratory system. As respiratory diseases are common in poultry production facilities, these antimicrobial chemicals are, at best, only partial replacements for existing antibiotics used in poultry.

Consumers and regulators are demanding chickens free of antibiotic or chemical residues. Imugene's biological product is residue free.

The product, under contract to Merial, will continue to progress through the regulatory approval phases that commenced earlier this year. Imugene has retained the sales rights in Australia, New Zealand and Japan.

ABOUT IMUGENE:

Imugene Limited (ASX:IMU) is an Australian biopharmaceutical company specialising in the development and commercialisation of animal health products for production animals (pigs and poultry) and companion (pet) animals.

Imugene's products safely prevent disease in animals, reduce or eliminate the use of antibiotics, harmful chemicals and drugs and, in production animals, reduce the level of antibiotic and chemical residue entering the human food chain.

Imugene owns the worldwide rights to the Adenoviral Vector Delivery System for pigs and poultry. It is this Delivery System that is used to deliver Imugene's *poultry productivity enhancer*. Patents have been either granted or are under application in the major pig and poultry markets worldwide.

Imugene's poultry and pig portfolio is tapping into segments worth US$3 billion of the existing US$8 billion global spend on existing treatments per year. The majority of the existing treatments are chemical and antibiotic solutions that are becoming less effective for disease treatment and productivity enhancement. Compounding the problem of diminishing efficacy, governments and health organisations, internationally, are lobbying and legislating against the use of antibiotics in favour of non-chemical treatments.

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Imugene's Poultry Productivity Enhancer - Trial Summary

This trial was conducted under Animal Ethics Committee Approval 998.

Trial Protocol

The trial was designed to compare the effect of several doses (either two or multiple doses) of Imugene's poultry productivity enhancer treatments on the growth of commercial broilers birds being fed either feed containing an antibiotic or feed without an antibiotic. The poultry productivity enhancer was delivered by Adenoviral Delivery Vector under the control of either the major late promoter (MLP) or the cytomegalovirus immediate-early (CMV) promoter. Control groups (no treatment and Adenoviral Delivery Vector only) were used to determine the weight gain of untreated birds. The trial ran for 41 days with birds weighed weekly.

Room 1 - Medicated feed:

Group 1: controls (no treatment),
Group 3: vector only 2 doses
Group 5: Poultry productivity enhancer (CMV) 2 doses
Group 7: Poultry productivity enhancer (CMV) multiple doses
Group 9: Poultry productivity enhancer (MLP) 2 doses (previous version)

Room 2 - Non-medicated feed:

Group 2: controls (no treatment)
Group 4: vector only 2 doses
Group 6: Poultry productivity enhancer (CMV) 2 doses
Group 8: Poultry productivity enhancer (CMV) multiple doses
Group 10: Poultry productivity enhancer (MLP) 2 doses (previous version)

Results:

Weight Gain

- Groups given the poultry productivity enhancer CMV treatment (Groups 5,6,7 & 8) showed statistically significant weight gains over control groups (Groups 1 & 2) ($p<0.05$). These gains were ranged from 7.13% to 7.27%
- Groups given the poultry productivity enhancer CMV treatment (Groups 5,6,7 & 8) showed greater growth gains than groups given poultry productivity enhancer MLP (Groups 9 & 10).
- Mulitple doses gave no further weight gains when compared to two doses.

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Mortality

- Three birds died and they were all in the groups fed non-medicated feed and did not receive any poultry productivity enhancer treatment.

Feed Conversion Ratios

- The groups treated with the poultry productivity enhancer CMV (Groups 5, 6, 7 & 8) showed feed conversion ratios (FCRs) no higher than the other groups indicating that these groups did not increase their weight by eating more.

Comments

- Treatment with the poultry productivity enhancer CMV resulted in statistically significant weight gains of >7%. The new CMV version performed better than the previous MLP version.

- The expected percentage improvement in birds treated with the poultry productivity enhancer will vary between trials, dependent upon the level of disease challenge in the treated or non treated birds. No overt disease was seen in any group in this trial. The percentage weight gains may be significantly higher in treated birds in the face of severe disease challenge such as that experienced periodically in commercial production sheds.

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