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## Research and Scientific Reports Update

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### **Bute residues of low concern for consumers, say EFSA and EMA**

The illegal presence of residues of phenylbutazone (bute) in horsemeat is 'of low concern for consumers', according to a joint assessment by the European Food Safety Authority (EFSA) and the European Medicines Agency (EMA). In a risk assessment published in April, they explain that this is because of the low likelihood of exposure and the overall low likelihood of toxic effects. However, they confirm that it is not possible to set safe levels for phenylbutazone in food products of animal origin, and say that its use in animals intended for the food chain should remain prohibited.

The EFSA and EMA were asked by the European Commission to assess the risks posed by the presence of phenylbutazone in horsemeat following the identification of beef products adulterated with horsemeat and the discovery of phenylbutazone in horse carcasses illegally entering the food chain. In their latest assessment (available at [www.efsa.europa.eu/en/efsajournal/pub/3190.htm](http://www.efsa.europa.eu/en/efsajournal/pub/3190.htm)), the EFSA and EMA state that no new relevant information has become available since the initial safety assessment in 1997 and that phenylbutazone cannot be used in food-producing animals.

In their assessment, the EFSA and EMA estimate that, on a given day, the probability of a consumer being both susceptible to developing aplastic anaemia and being exposed to phenylbutazone ranges from **between two in a trillion to one in 100 million**.

The risk of carcinogenicity was judged to be 'of very low concern' given the estimated infrequency of eating horsemeat containing residues of phenylbutazone, or beef products adulterated by horsemeat.

To improve controls and minimise risk, the EFSA and EMA recommend the introduction of reliable EU-wide identification for horses and other solipeds, harmonisation of checks for phenylbutazone and improvement of the reporting of monitoring data for its possible presence in food.

**NK comment:** *The risk of a consumer being both susceptible to developing aplastic anaemia and being exposed to phenylbutazone ranges from between two in a trillion to one in 100 million, so the human health risk is insignificant. However, it highlights the importance of full traceability in the food chain.*

### **Genetic analysis of novel influenza virus A (H7N9) raises concern about pandemic potential**

**T. Kageyama, S. Fujisaki, E. Takashita, H. Xu, S. Yamada, Y. Uchida and others**

AS of April 10, 2013, novel influenza A viruses of the H7N9 subgroup had infected 33 and killed another nine people in the Shanghai, Anhui, Jiangsu and Zhejiang provinces of China. This study aimed to carry out a biological evaluation of the genetic sequences of the avian influenza A (H7N9) viruses that caused the fatal human infections.

From the genetic analysis of the first four fatal cases, the researchers found that the novel influenza A (H7N9) viruses were likely to have acquired the haemagglutinin (HA) gene from an avian H7 virus of unknown neuraminidase (NA) subtype, the NA gene from an avian N9 unknown HA subtype, and the remaining viral segments from avian H9N2 viruses known to have been circulating in poultry in Shanghai, Zhejiang, Jiangsu and neighbouring provinces of Shanghai.

All H7N9 viruses examined encoded a deletion in the NA stalk region, which is reported to occur on virus adaption in terrestrial birds. This deletion has been associated with increased virulence in mammals.

The authors conclude that the viruses analysed in this study possessed several characteristic features of mammalian influenza viruses, which are, they say, likely to contribute to their ability to infect humans and raise concerns regarding their pandemic potential.

**NK comment:** *Preliminary investigations suggest that these influenza viruses may not be highly pathogenic to avians, but that they could have the potential to become highly pathogenic to mammals, thus raising the concern that they could pose a risk of triggering a human influenza pandemic.*

### **Team effort eradicates BVDV in Norway**

A paper recently published in *Veterinary Record* by Torleiv Loken and Ola Nyberg describes a collaborative project that ran from December 1992 until 2004 with the intention of eradicating pestiviruses (BVDV) from the Norwegian cattle population. The collaborative project involved four key partners: the Norwegian Animal Health Authorities (NAH), the National Veterinary Institute, the cattle owners, and the cattle industry comprised of three farmers' associations.

Loken and Krogsrud developed a strategy in 1992 based on the identification and culling of all PI animals, and testing was performed in four tiers:

- Tier 1 Annual screening for antibodies in bulk milk from all herds.
- Tier 2 Herds found positive in tier 1 were examined for antibodies in pooled milk samples from primiparous cows.
- Tier 3 Herds found positive in tier 2 were examined for antibodies in pooled blood samples from young stock. These herds were subject to restrictions.
- Tier 4 Antibody-negative animals in herds that were found positive in tier 3 were tested for pestivirus antigen in blood and, if positive, were designated as a PI animal.

Following the culling of PI animals, a herd was considered to be free from pestivirus when pooled blood from young stock was antibody negative on two sampling occasions, three months apart. The number of herds with PI animals peaked at about 3000 in the second year of the project, and then decreased steadily. Since 2005 the surveillance programme has not detected any dairy cattle or beef animal positive for pestivirus. A cost benefit analysis estimated that the project has saved the Norwegian dairy industry losses of between 5.5 million and 22 million euro. The total running cost of the project over 10 years was 6 million euro.

**NK comment:** *Whilst the structure of the Swedish industry may be different to that of Ireland the results highlight the positive financial return associated with BVDV eradication.*

### **Calving season is a stronger determinant of worm burdens in pasture-based beef production than the level of residual larval contamination at turnout.**

The combined influence of (1) calving period (early or late) and (2) overwintering contamination by residual infective larvae (high or low) on subsequent exposure of suckler calves to gastrointestinal nematodes was investigated. Hoglund *et al* found that the effect of calving date was greater than the level of residual contamination. This was because the adult cows produced large quantities of manure containing small amounts of nematode eggs from turnout, which significantly contaminated the pasture, and thereby, reduced the effect of prior high-low contamination. Early born calves were found to be more heavily exposed to parasites, most likely due to ingesting more herbage than those born later. Late-born calves also had relatively high antibody levels at turnout, which first decreased and then increased again. We suggest that the high antibody levels at turnout reflect passive transfer of maternal antibodies through the milk. There was also a significant difference in animal performance, with the more heavily exposed early born calves having significantly lower daily weight gain than the late-born calves. However, this might not be entirely due to increased parasitism.

**NK comment:** *Overall, it seems that egg excretion from cows plays a larger role in cow-calf transmission than previously thought. Therefore, the focus should perhaps be on deworming the cows around turnout in order to control parasites even in the growing calves. This should be examined in further studies with early born suckler calves on pasture.*

### **Modernising pig meat inspection systems**

The UK's Food Standards Agency (FSA) has welcomed a vote by European member states approving new legislation that will modernise the meat inspection system in pig slaughterhouses. The new legislation, which is expected to come into effect in June 2014, will increase the focus on microbiological hazards and introduce a risk-based approach to hygiene and welfare inspections. It forms part of a wider European review of official controls that aims to address some of the historical anomalies within the current regime. The FSA notes that, currently, meat hygiene controls focus more on visible parasites rather than on the microscopic pathogens that pose the greater risk today.

Among the new measures will be strengthened *Salmonella* controls in pig slaughterhouses, reduced *Trichinella* testing where other controls are in place, and reduced carcass handling to minimise cross-contamination. With a greater focus on tackling the more harmful pathogens found on pork, consumers should have even more confidence in the safety of what they are buying. For food businesses this is a very positive step towards more risk-based and proportionate regulation in the future. The FSA in the UK says that new proposals covering poultry, sheep and cattle meat inspection are also planned and are likely to be published within the next year.

**NK comment:** *This is a welcome development as it will reduce the risk of cross contamination due to handling of carcasses and allow funds to be directed towards reducing the prevalence of harmful pathogens, based on the use of modern technology.*