



Too hard to crack - eggs with residues - Executive Summary

This report contains important food-safety information for British consumers which we feel should have been issued by the Food Standards Agency (FSA) last year. In 2003 over 12% of eggs tested by government scientists contained residues of lasalocid, a toxic antibiotic. Some of these eggs were contaminated at significantly higher levels than ever previously recorded in Britain. Even one sample of organic eggs was found to be positive. This is part of an alarming trend: official figures demonstrate the increasing incidence of lasalocid residues in eggs over the last six years. Yet it is illegal to feed lasalocid to laying hens.

Lasalocid is sold worldwide as Avatec® 15% by the pharmaceutical company Alpharma. It has been routinely added to some poultry feeds for nearly 30 years to control a parasitic infection, which is a problem in intensive systems. But it is only now becoming clear that eggs are extensively contaminated. Despite all the unknowns, a careful examination of the available evidence clearly indicates that the residues found in some eggs in the UK are likely to have negative health implications for some consumers.

Health implications

This report argues that individuals at greatest risk from lasalocid residues in food are:

- those on diets which recommend above average egg consumption, such as the Atkins Diet
- the unborn child, because of its poor ability to break down toxic chemicals
- babies, if they ingest lasalocid residues through:
 - breast milk
 - certain infant formula feeds
 - cooked egg yolks as a weaning food
- any young child with a heart condition
- the elderly
- those, like the Prime Minister, Tony Blair, who suffer from cardiac arrhythmias such as atrial fibrillation and other tachycardias
- those who suffer from high blood pressure and some heart conditions

This report also suggests there is a potential link between Sudden Adult Death Syndrome and the consumption of lasalocid residues in food.

Regulatory muddle

There are no legally enforceable maximum residue limits (MRLs) for lasalocid and some other antibiotic feed additives in food in the UK, even though this is a basic requirement for all veterinary medicines.

MRLs for lasalocid in eggs have been set in Australia. If Britain adopted the same safety limits all the eggs reported in the UK as positive samples in 2003 would have contained illegal amounts of the drug. The most affected UK eggs were 69 times over the Australian safety limit. However, this is not just a British problem; we at least test for

lasalocid in eggs, whereas many countries do not.

Key findings on residues of lasalocid in eggs

Source of contamination

- Lasalocid is not legally permitted in laying-hen feed, but it is permitted for young bird destined to become layers, as well as in broiler, quail, turkey and pheasant feed. Cross-contamination at the feed mill is the biggest single source of the problem, but use in young birds near laying age, failure to clean lorries between loads, the wrong feed being delivered and the wrong feed being fed on the farm are all implicated.

Which eggs are affected?

- Residues occur most frequently in battery eggs, but are also found in free-range and barn systems. Until recently no residues had been found in organic eggs, however one sample taken during 2003 contained 60 µg/kg.
- Contaminated eggs are not distributed evenly. When one egg in a box is contaminated, every egg in the box is likely to be contaminated.
- No eggs have so far been sampled in 2004 (up to the end of March).

Residue levels

- Sampling is 'targeted' to areas where inspectors believe problems are most likely. No information is available on what proportion of the industry is covered by this. However, if the 2003 results were representative of the whole industry, more than three million eggs eaten every day by British consumers would have been contaminated with lasalocid above 50 parts per billion (ppb) (the Australian maximum residue limit).
- The percentage of samples contaminated above 50 ppb has increased from 0.5% in 1998 to 1% in 1999, 3.3% in 2000, 2.3% in 2001, 6.7% and 2002, and 12.4% in 2003.
- Last year some UK eggs contained lasalocid residues at 3,450 ppb. This is 69 times higher than the Australian legal limit.

Inadequate monitoring

- Even though the problem is getting worse, roughly half as many tests are undertaken now as ten years ago. In 2003 UK regulators tested just 221 samples – yet we ate almost 10 billion eggs that year.
- Britain no longer tests individual eggs. Instead tests are carried out on a mixture of 12 eggs. The Food Standards Agency has confirmed that the results are average figures, which may not fully reflect contamination levels in individual eggs.
- No egg-based baby food has been tested since 1999, chicken liver is no longer tested using the most sensitive methods, and infant formula feed containing egg-yolk lecithin has never been tested.

Organic farming

- Organic standards should be adequate to ensure that no residues of lasalocid occur in organic eggs, however, the use of conventional feed mills to prepare organic rations and the use of conventionally-reared layer replacements in organic egg production are clear weaknesses.

Increasing drug use

- Though data for lasalocid sales is considered commercially sensitive information in the UK, it is known that total sales of lasalocid and three other drugs in the same class increased by 27% between 2000 and 2002, from 153 to 195 tonnes of active ingredient (about 1,200 tonnes of product), enough to medicate 2.5 million tonnes of chicken feed.

Key findings on regulation

No maximum residue limits (MRLs)

- The legislation governing the use of feed additives like lasalocid is effectively meaningless in the UK. This is because legally enforceable maximum residue limits for lasalocid in eggs and other foods have never been set. As a result no one gets

prosecuted, regardless of how high the residues, or how often they occur.

Acceptable daily intake?

- In the absence of MRLs, British regulators issue reassurances based on a crude calculation of the extent to which residues do or do not exceed the acceptable daily intake (ADI). However, their method is seriously flawed because it makes no allowance for the presence of toxic metabolites of lasalocid in food (something which is taken into account when MRLs are established). They also significantly underestimate the average daily consumption of egg by young children and make no allowance for peaks in consumption by individuals of all ages on any one day, a point acknowledged by the FSA.

Safe levels inappropriately assessed

- The ADI for any drug in humans is supposed to be based on experiments on the most sensitive animal species. The EU ADI for lasalocid however, was established from studies on rats - one of the species least sensitive to lasalocid. Larger mammals are significantly more sensitive to lasalocid's toxicity. Even if rabbits had been the test species it is likely that the ADI would have been set at one quarter of its present level. In the UK/EU the ADI is 5 ppb per kilo of human bodyweight. In Australia it has been set at 1 ppb.

No safety assessment for most commonly fed species

- Lasalocid is most widely used in rearing layer replacements, pheasants and quail, yet its use in these species has never been reviewed by an EU scientific committee as it has been in broiler chickens and turkeys.

No withdrawal period for young layers

- There are no available studies on the metabolites of lasalocid in eggs and no withdrawal period has even been suggested between its use in layer-replacement birds and the sale of eggs from them. This despite the known fact that in some situations birds will begin to lay as early as the 16th week, when they can still legally receive lasalocid in feed and it is not known how long it takes for residues of lasalocid in laying birds to decline until they are no longer present in eggs.

Key findings on lasalocid and human health

Effects on humans largely unknown

- We have been unable to find a single scientific review of the potential toxic effects for humans of consuming lasalocid residues in food. However, a review of monensin (a closely related drug) warned that ingestion of even small amounts in food would pose a danger to victims of coronary heart disease. Animal studies have shown that lasalocid has a similar toxic effect on the heart to monensin and that in some animals species it also has a potent toxic effects on the nervous system.

Sudden-death syndrome

- Cardiomyopathy, especially hypertrophic cardiomyopathy, is the most common cause of sudden death in people in the UK. Slight accidental overdosing with lasalocid can cause cardiomyopathy in animals. Calcium ionophores, like lasalocid, induce hypertrophic cardiomyopathy in rats. Ventricular fibrillation is also linked to sudden-death syndrome and calcium ionophores have been shown to render initially resistant laboratory dogs susceptible to ventricular fibrillation.

Cardiac arrhythmia

- Tony Blair suffers from supraventricular tachycardia, a type of arrhythmia involving rapid heartbeats. Half a million Britons suffer from similar conditions. Ionophore antibiotics like lasalocid may affect the electrical impulses to the human heart: in animals, they have been shown to increase heart rate and the force of contractions, even at very low doses. One sufferer who contacted the Soil Association experienced a dramatic improvement after giving up eggs.

Other serious diseases

- Lasalocid's toxicity is linked to its ability to carry ions (electrically charged atoms)

across biological membranes. This can have profound effects on the health of individual cells and ultimately on the organism as a whole. Abnormalities in the movement of ions across cell membranes have been linked with a variety of human diseases such as myocarditis, Alzheimer's disease, syndrome X, Tarui's disease and possibly chronic-fatigue syndrome and prion disease.

Lasalocid and infants

- Lasalocid accumulates in egg yolk. Egg yolks are now often recommended for babies as young as six months old because they contain high levels of essential fatty acids. Eating as many as four eggs a week has been recommended, yet eating only one egg yolk contaminated at recorded levels would significantly breach the Acceptable Daily Intake for such infants.
- Acceptable daily intakes (ADIs) do not apply to babies below 12 weeks of age. Despite this, no studies have been undertaken to establish how much lasalocid might be excreted in human milk. Comparing the way in which other antibiotics pass into maternal milk, we suggest that in some cases it could contain significant levels.
- Egg-yolk lecithin is included in some infant-formula milks, particularly those formulated for premature babies. There are scientific reasons for believing that lecithin will be a potent vehicle for lasalocid residues, yet infant formula with added egg yolk or egg-yolk lecithin has never been tested for lasalocid residues by British regulators and there appears to have been no research on this issue either.

Recommendations

Our main recommendation is that the marketing authorisation for Avatec® 15% CC and Avatec® 15% CC Game should be suspended as a matter of urgency. Its widespread use is even threatening the purity of organic eggs. We recommend a range of measures to increase public safety and overall understanding of this drug until action is taken:

Recommendations on consumer safety

Babies and children

- Parents should avoid feeding conventionally produced eggs or products containing them to babies under a year old.
- Children over 12 months of age should, if possible, eat only organically produced eggs/egg-based foods, because these are still the safest option.
- Breast feeding mothers should eat organic eggs where possible or avoid eating more than two eggs (including all sources) on any day.

Adults

- Adults with heart problems should eat only organically produced eggs or, where this is not possible, should limit their daily consumption to a maximum of two eggs, including foods containing eggs.
- Adults should avoid diets which involve high daily consumption of conventionally produced eggs.

Regulation

- The acceptable daily intake for lasalocid should be reduced from its current 5µg/kg (5 parts per billion) to 1 µg/kg as in Australia, on a provisional basis and pending further review by scientists.
- Until such time as EU scientists are able to agree maximum residue limits (MRLs) for lasalocid in a range of foods, a provisional MRL of 50 µg/kg of lasalocid in eggs should be adopted, as in Australia.
- A provisional withdrawal period of 21 days between the use of lasalocid in layer replacements and the use of pullet eggs for human consumption should be introduced.
- Chicken feed containing lasalocid on sale to the public should contain a clear

warning that if fed to laying birds eggs will be unsafe to eat.

Tighter testing regime

- Testing for lasalocid in eggs, broiler-chicken liver, quail eggs and quail muscle should take place every month of the year, not just from April to December as at present.
- Testing for lasalocid residues in egg-based baby food (last undertaken in 1999) should be introduced into the surveillance programme this year, using the most sensitive analytical methods available.
- Testing for lasalocid residues in infant formula and in supplementary feeds for premature babies containing egg-yolk lecithin should be introduced

Studies on potential effect in humans

- The new advisory body set up by Public Health Minister Melanie Johnson, to focus on adult sudden deaths and heart arrhythmias such as atrial fibrillation, should examine what part lasalocid residues in food might be playing in the incidence of these diseases.
- The Royal College of Pathologists should consider whether it would be practical to tests the livers of those who die unexpectedly from heart-related conditions for the presence of lasalocid.
- Scientific research should be commissioned into the behaviour of lasalocid in hens' eggs, quail eggs and meat, and egg-yolk lecithin.

Organic farming

- Organic egg producers should move as quickly as possible to end the practice of allowing conventionally-reared layer replacements in organic egg production. Organic certification bodies should ensure that organically reared replacements are used wherever they are available, as required under the EU regulation. Until this is achieved it is imperative that the minimum six weeks conversion period between the buying in of conventional replacements and the marketing of organic eggs is strictly adhered to.
- ACOS, DEFRA and certification bodies should review the procedures of licensed organic poultry feed manufacturers with respect to lasalocid contamination, and consider whether further safeguards can be introduced.

How can I support the work of the Soil Association?

The Soil Association is a membership charity, we urgently need your support to continue our work. As public support for the Soil Association continues to grow, our ability to influence the thinking and policies of government and big business grows with it. In this way we help to develop a truly healthy and sustainable future. Join us today and help us to continue campaigning for sustainable agriculture and organic food. You can join the Soil Association on our website, over the phone or by writing to us.

Further Reading

Please see the Soil Association website library, <http://www.soilassociation.org/library>, for more information

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