

Using scientific evidence to inform public policy on the long distance transportation of animals: role of the European Food Safety Authority

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Summary

The authors review the work of the previous Scientific Committee on Animal Health and Animal Welfare and the current European Food Safety Authority (EFSA) in providing scientific advice on the welfare aspects of animal transport and the impact of this advice on the European Union (EU) regulatory framework. Through its Protocol on the Protection and Welfare of Animals, the Treaty of Amsterdam obliges European institutions to pay full regard to the welfare requirements of animals when formulating and implementing EU legislation. Regulation 1/2005 states that EU legislation should be amended to take into account new scientific evidence. Provisions for poultry, cats and dogs take into account the recommendations included in EFSA's Scientific Opinion which considers different species (poultry, deer, rabbits, dogs and cats, fish and exotic animals). Examples of the effect of the scientifically based conclusions and recommendations from the Scientific Opinion on the measures in Regulation 1/2005 are summarised and show the impact of scientific evidence on EU legislation.

Keywords

Animal, Disease, Duration, Food, Long distance, Space, Transport, Water, Welfare, Withdrawal.

Utilizzo delle evidenze scientifiche per l'istruzione della politica per il trasporto a lunga distanza: ruolo della Autorità Europea per la Sicurezza degli Alimenti

Riassunto

Gli autori analizzano il lavoro che il precedente Comitato Scientifico per la Sanità e Benessere Animale e l'attuale Autorità Europea per la Sicurezza degli Alimenti (EFSA) hanno svolto nel fornire informazioni scientifiche sui vari aspetti del trasporto animale e il conseguente impatto sullo sviluppo del programma legislativo dell'Unione Europea. Con il Protocollo sulla Protezione e Benessere degli Animali, il Trattato di Amsterdam obbliga le Istituzioni Europee a tenere in considerazione, in sede legislativa comunitaria, le richieste inerenti il benessere animale. Il Regolamento 1/2005 afferma che la legislazione della CE va emendata in base alle nuove evidenze scientifiche. I provvedimenti su pollame, cani e gatti tengono conto delle indicazioni dell'Opinione Scientifica dell'EFSA, che prende in considerazione varie specie (pollame, cervi, conigli, cani e gatti, pesci ed animali esotici). Sono riassunti esempi dell'effetto delle conclusioni e raccomandazioni basate su studi scientifici elaborati dalle Opinione Scientifica sulla scorta del Regolamento 1/2005.

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Questi studi dimostrano l'impatto dell'evidenza scientifica nell'attuale legislazione europea.

Parole chiave

Benessere, Benessere animale, Contagio, Disponibilità di spazio, Durata del viaggio, Lunga distanza, Privazione di acqua, Privazione di cibo, Trasporto.

Introduction

As stipulated in Regulation (EC) No. 178/2002 (6), the mission of the European Food Safety Authority (EFSA) is to provide scientific advice and scientific and technical support for Community legislation and policies in all fields that have a direct or indirect impact on food and feed safety, including animal health and welfare. This mission is based on the World Trade Organisation agreement on the application of sanitary and phytosanitary (SPS) measures (13) which (Article 5, points 1 and 2), establishes that Members shall ensure that their SPS measures are based on an assessment, taking into account risk assessment techniques developed by the relevant international organisations, and that Members, when conducting risk assessments, take into account, among other matters, available scientific evidence.

EFSA provides scientific opinions based on a risk assessment (RA) approach, mainly at the request of the different European Commission services, but also for the European Parliament, the European Union (EU) Member States or for EFSA itself under its own mandate. When EFSA receives a request to issue a Scientific Opinion, a working group is created, composed of experts on the specific issue and with a risk assessor responsible for defining the risk pathways and the risk assessment methodology. Through different meetings, the working group compiles a scientific report based on all available scientific data on the issue. A Scientific Opinion containing all conclusions and recommendations from the scientific report is then adopted. In agreement with EFSA policy, all scientific documents issued by EFSA are published on its website (www.efsa.europa.eu).

Before the creation of EFSA, the Scientific Veterinary Committee (SVC) and the Scientific Committee on Animal Health and Animal Welfare (SCAHAW) of the Directorate General of Health and Consumer Protection (DG Sanco) were responsible for providing scientific opinions on animal health and welfare issues.

The objective of this paper is to review the work conducted by both SCAHAW and EFSA on the provision of scientific advice on the welfare of animals during transport and on the impact of these scientific assessments on the EU regulatory framework.

European Union animal welfare policy on the protection of animals during transport

Through its Protocol on the Protection and Welfare of Animals recognising that animals are sentient beings, the Treaty of Amsterdam (9) enforced since 1 May 1999, makes a shortcut point for the actions of the EU on animal welfare. It obliges European institutions to pay full regard to the welfare requirements of animals when formulating and implementing Community legislation.

Community legislation on the protection of animals during transport as published in the past, i.e. Council Directives 91/628/EEC (1), 95/29/EC (2), Regulation EC/1255/97 (3) and EC/411/98 (4), were always based on different scientific assessments. For example, the Report of the EU Scientific Veterinary Committee, Animal Welfare Section, entitled 'The transport of farm animals' was adopted on 18 May 1992 (12) and was used, among other resources, as a basis for EU legislation prior to the adoption of the Treaty of Amsterdam.

Council Regulation (EC) No. 1/2005 of 22 December 2004 (8) on the protection of animals during transport states very clearly that according to the Scientific Opinion of the SCAHAW on the welfare of animals during transport (7), Community legislation should be amended to take into account new scientific evidence. As this Scientific Opinion gives details only for the transport of horses, pigs,

sheep and cattle, the same regulation states that provisions for poultry, cats and dogs will be set out in appropriate proposals when the Scientific Opinion of the EFSA is available. As a result, in March 2004, the Scientific Panel on Animal Health and Welfare Panel of EFSA adopted a Scientific Opinion related to the welfare of animals during transport (11). To provide additional scientific evidence on this issue, a Scientific Opinion related to standards for the microclimate inside animal road transport vehicles was adopted by the same Panel in October 2004 (10). Therefore, according to the provisions of Council Regulation (EC) No. 1/2005 (8), the Community legislation will be amended accordingly, taking into account new scientific evidence available.

The main conclusions and recommendations from the different scientific reports which have had a direct impact on the drafting of Community legislation are summarised below.

Scientific Report on the welfare of animals during transport

On 11 March 2002, the SCAHAW adopted a scientific report on the welfare of animals during transport (details for horses, pigs, sheep and cattle) (7) which considered previous Council Directives 91/628/EEC (1) and 95/29/EC (2) and Regulation EC/411/98 (4). The report considered, in particular, effects on the welfare of animals during transport that were related to loading densities, travelling times, resting times and watering and feeding intervals. The interactions of these effects with the use of upgraded or other vehicles and with stresses during loading and unloading were also considered. Other matters considered were the welfare of animals on roll-on roll-off vessels especially during boarding, the welfare of horses during long distance transport and the methods which could be used by operators and inspectors to monitor the welfare of animals during transport.

Loading, unloading and transport of animals

In relation to the stress associated to the loading and transport of unaccustomed animals, the Opinion concluded that the transport of animals should be avoided wherever possible and journeys should be as short as possible. A general conclusion valid for all species was that animals should be prepared for the experiences associated with the journey, loaded carefully, kept at a stocking density and with a roof height that meets their needs for normal movements and resting positions, driven in such a way that they can maintain their balance at all times, fed, watered and rested according to their needs, and unloaded carefully.

In relation to loading and unloading, it was concluded that systems which eliminate the need for ramps or purpose-built ramps no steeper than 10° are desirable and that no animal should be required to negotiate a ramp steeper than 20°.

Training of staff

As poor welfare in transported animals is often caused by bad treatment, personnel responsible for the animals should be properly trained, should have a route plan with information about whom to contact in emergency at all points of the journey, and should inspect the animals before the journey and at intervals that are adequate to detect problems. Specific details are given according to species.

Disease transmission and mixing of animals

Recent examples of diseases transmitted when animals are transported are classical swine fever (hog cholera) and foot and mouth disease. Therefore, the Scientific Opinion recommends that contacts between transported animals and other farm animals should be minimised, quarantine periods on farms are advisable after transport, the use of markets for slaughter animals should be discouraged and animals should not be unloaded from vehicles at staging points.

Since pigs and adult male cattle may fight if mixed, resulting in poor welfare and carcass damage, such animals should not be mixed with individuals that have previously lived in different pens and, therefore, vehicles should be equipped with moveable pen dividers.

Space allowances, journey duration, feed and water

Recommended space allowances are related to the duration of the journey. For sheep on journeys not exceeding 4 h and for cattle on journeys of no more than 12 h, the possibility to stand maintaining balance without any contact with other animals or the vehicle walls was considered sufficient. For pigs on journeys of up to 8 h and for sheep on journeys of 4–12 h, animals need to lie down in a comfortable lying position without risk of being walked on by other animals. For journeys exceeding 8 h (for pigs) and more than 12 h (for sheep and cattle), it is sufficient for the animals to rest in a comfortable position and to be able to move around to access feed and drink. The recommended ceiling heights should allow comfortable standing and adequate ventilation. As a consequence, horses of average size cannot be transported in multi-deck vehicles and adult sows and boars cannot be transported in three-deck vehicles.

When a proper inspection of animals is not possible (i.e. animals in crates, deck ceilings ≤ 1.4 m), the journey duration should not be longer than 8 h, after which an inspection should be performed. Food and water should be provided 8 h after a journey commences for horses, pigs, calves and lambs and 12 h after a journey commences for older sheep and cattle. Pigs should be offered water at every driver's break when the temperature is 20°C or above and hay should be provided *ad libitum* for horses during transport.

Driving of vehicles

Careful driving of animal transport vehicles, less lateral acceleration whilst taking corners and less sudden braking should be similar to the standard of driving normally accepted by human passengers.

Scientific Opinion of the Animal Health and Welfare Panel related to the welfare of animals during transport

The EFSA Scientific Opinion adopted on 30 March 2004 (11), applies the same considerations as the earlier SCAHAW Opinion (7), to the transport of other species of animals, i.e. poultry, deer, rabbits, dogs and cats, fish, and exotic animals. It should be pointed out that the amount of available scientific evidence in the literature on the welfare of animals during transport varies greatly according to species. Therefore, the conclusions and recommendations that apply to a species may vary in number and nature depending on the available evidence.

General conclusions and recommendations

The same general conclusions and recommendations found in the previous SCAHAW Opinion (7) on the welfare of horses, pigs, sheep/goats and cattle during transport can be applied to other species, such as, poultry, deer, rabbits, dogs and cats, fish, exotic animals, etc. These general conclusions and recommendations can be summarised as follows:

- all stressful conditions should be minimised
- transport of unaccustomed animals should be avoided
- animals must be loaded and unloaded carefully
- the stocking density of animals inside the vehicle must meet their movement and resting needs, including the maintenance of their balance when being transported
- animals should be fed, watered and rested according to their needs
- personnel responsible for the animals should be properly trained
- careful driving of animal transport vehicles is recommended (similar to requirements for humans)
- animals that may fight if mixed (i.e. adult ruminants, rabbits, dogs, cats and male deer)

should not be mixed; vehicles should have moveable pen dividers

- systems which eliminate the need for ramps or purpose-built ramps no steeper than 10° are desirable.

Animal and zoonotic disease transmission

Transportation of mammals, birds and fish can spread both animal and zoonotic diseases. To prevent these diseases from occurring, a high health status in the population of origin is suggested, as well as clinical inspection prior to transportation and biosecurity measures, including cleaning and disinfection of vehicles and equipment. The same prevention measures as those described in the previous SCAHAW Opinion (7) apply to the species considered in this Opinion (11), such as minimising contact between animals, ensuring quarantine or isolation periods as well as resting, feeding and watering spaces in the vehicle.

Special recommendations for different species

Special recommendations are given for fish, which should normally be loaded and unloaded without air contact, provided with highly oxygenated water and maintained at a stocking density which enables their needs to be met.

Domestic fowl mortality increases as transport duration increases. The extent of mortality is affected by transport conditions, health status, ventilation and driving. In addition, animals may suffer considerable pain and distress for some time prior to death. When temperatures are high, the food reserves of domestic fowl chicks are used up in 48 h or before. Therefore, journeys exceeding this time should be avoided. Chicks younger than one week of age should not be transported given the uncertainty about whether or not they have consumed sufficient food and water to withstand a journey.

Most individuals of some species such as ratites and deer are severely disturbed by the proximity of humans and by transportation. When these animals are not accustomed to

humans, shooting on a farm field may be less stressful than transport, provided that the personnel in charge of shooting are experienced and careful.

In no species should the use of behaviour-modifying drugs during transport be used on a routine basis and be substituted for good practice.

Prohibition of transport for certain animals and particular caution for others

Animals which should not be transported are those that are unfit to travel because they are injured, diseased or distressed, or animals such as ostriches or other ratite females which might produce an egg during the transport period, or mammals in the last five days of pregnancy.

Small animals, such as poultry and rabbits, should be handled with particular caution because of the risk of bone fracture and severe fear responses.

Special conditions are described for most of the species mentioned in this Scientific Opinion (i.e. space allowance variations according to species, transportation temperatures and adaptation to humans).

The duration of the transport journey should preferably be no longer than the time recommended for each species for the provision of food and water.

Scientific Opinion of the Animal Health and Welfare Panel related to standards for the micro-climate inside animal road transport vehicles

An EFSA Scientific Opinion on microclimates inside animal transport road vehicles (10) was adopted on 20 October 2004 that expanded previous Scientific Opinions on the welfare of animals during transport (7, 11) and the SCAHAW Opinion of 1999 on microclimates (5). It confirms that the welfare of the transported animals is substantially affected by several micro-climatic factors, such as

temperature and humidity, air velocity, air quality, ventilation and insulation of the surrounding walls, floor and roof.

Temperature and humidity are the two most essential parameters to determine for the thermal comfort of the animals and a range of acceptable temperatures and humidity (Table I) is proposed. Temperatures should not be considered as absolute threshold values because the effect of temperature on an animal is also influenced by other parameters, such as air velocity and ventilation rate.

Although temperature measurements are relatively easy to perform on transport vehicles, the measurement of the other micro-climate components, such as humidity, air velocity, ventilation rate, carbon dioxide or ammonia concentration is difficult at present.

Vast regional climatic differences exist in Europe and conditions that do not affect welfare in animals in northern Member States might not be acceptable in southern Member States and vice-versa. Therefore, the Scientific Opinion of 2004 on micro-climates (10) suggests the provision of a sufficiently broad margin of thresholds for temperature and humidity.

Animals are able to cope with changes in their climatic environment when they are kept on farms. However, during transport, they are exposed to a large variety of unknown or unaccustomed factors and may find it more difficult to cope with the thermal environment during transport, particularly when the effects

of social stress and restricted possibilities for them to behave as they would in normal conditions are taken into consideration. Animals may be able to cope with extremes of temperatures for short periods but may be unable to cope for long periods.

There is an urgent need for more detailed practical research on micro-climate conditions in transport vehicles in order to develop more realistic ventilation models for the variety of animal species in different European climatic zones based on standardised instrumentation and measuring protocols.

Impact of the scientific evidence on European Union policy on the welfare of animals during transport

The adoption of the Council Regulation (EC) No. 1/2005 (8) on the protection of animals during transport amends previous EU legislation on animal welfare during transport with a review of the previous measures and takes newly available scientific evidence into account. In this regulation, the actors are identified and their respective responsibilities defined, vigilance rules are strengthened and measures to be applied in relation to long journeys and to the vehicles used are foreseen.

Some of the measures contained in this new regulation take into consideration the conclusions and recommendations of previous

Table I
Proposed maximum and minimum temperatures inside vehicles for animal transport (11)

Species	Type/weight /age	Minimum temperature* (°C)	Maximum temperature adjusted for humidity (°C)	
			RH <80 %	RH >80%
Pigs	<10 kg	20	30	29
	10-30 kg	14	32	29
	>30 kg	10	25 (30)*	25 (30)*
Cattle	0-2 weeks	10	30	27
	2-26 weeks	5	30	27
	>26 weeks	0	30	27
Sheep	Full fleece	0	28	25
	Shorn	10	32	29
Goats		6	30	27

* with mechanical ventilation and misting devices

Scientific Opinions (7, 11) and, consequently, are based on scientific evidence. Table II presents some examples of the impact of the scientifically based conclusions and

recommendations on the measures prescribed in the regulation, showing the impact of scientific evidence on EU legislation.

Table II

Examples of the impact of scientific evidence on the provisions of Council Regulation (EC) No. 1/2005

Conclusions and recommendations	Council Regulation (1/2005)
The education of personnel involved in handling and moving animals or driving vehicles can greatly improve animal welfare	Article 6 Transporters. 4. Transporters shall entrust the handling of the animals to personnel who have received training on the relevant provisions of Annexes I and II Article 10 Requirements for transporters authorisation Article 16 Training of staff and equipment of the competent authority Article 17 Training courses and certificate of competence
Animals unfit to travel because of injury or disease or because their physiological state (might produce an egg during transport period or mammals in the last five days of pregnancy) should not be transported (a list of situations is provided)	Annex I Chapter I. Fitness for transport 2. Animals that are injured or that present physiological weakness or pathological processes shall not be considered for transport and in particular...
Behaviour-modifying drugs should not be given to animals in place of good practice for the transport of any animal Using some drugs when animals are transported by air may be harmful	Annex I Chapter I. Fitness for transport 5. Sedatives shall not be used on animals to be transported unless strictly necessary to ensure the welfare of the animals and shall only be used under veterinary supervision
Many animals are forced to move up or down ramps which are too steep during loading and unloading Systems which eliminate the need for ramps or purpose-built ramps no steeper than 10° are desirable No animal should be required to negotiate a ramp steeper than 20°	Annex I Chapter III. Transport practices 1. Loading, unloading handling. 1.4 (a) Ramps shall not be steeper than an angle of 20°... Where the slope is steeper than 10°, ..., ramps shall be fitted with a system, ... which ensures that the animals climb or go down without risks or difficulties
Animals which may fight if mixed (i.e. have previously lived in different pens) should not be mixed	Annex I Chapter III. Transport practices Separation 1.12. Animals shall be handled and transported separately in the following cases: a) animals of different species b) animals of significantly different sizes and cages...
Food and water should be provided at different times after a journey commences, depending on the species or, for instance, during the driver's break when the temperature is 20°C or above	Annex I Chapter V. Watering and feeding interval, journey times and resting periods 1. Domestic equidae, domestic animals of bovine, ovine, caprine and porcine species 2. Other species
The stocking density of animals must meet their movement and resting needs, including the maintenance of their balance when being transported (space allowance specifications per species are given)	Annex I. Chapter VII. Space allowances A. Domestic equidae B. Bovine animals C. Sheep/goats D. Pigs E. Poultry

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