BORIS POPOVIĆ, pilot,
Fakultet prometnih znanosti
Zagreb, Kušlanova 2
NATALIJA TOPIĆ POPOVIĆ, M.Sc., DVM.
Institut Ruđer Bošković,
Zagreb, Bijenička cesta 54
NIKICA HOTI, B.Eng., pilot
Fakultet prometnih znanosti
Zagreb, Kušlanova 2

Traffic and Human Environment
Review
U. D. C. 656.074:656.7
Accepted: Mar. 27, 2000
Approved: Sep, 13. 2000

ANIMAL WELFARE IN AIR TRANSPORT

ABSTRACT

Animal welfare is becoming an evermore-important factor for air carriers from the economical viewpoint, due to its important impact on the carrier public image. High standard care has to be taken of animals during transport in order to satisfy an important segment of airline customers, either the Business/First class passengers travelling with pets, or influential shippers of racing horses, dogs, Zoo species etc.

Air transport of animals, disregarding other advantages, may pose a threat to their health and welfare being a significant multifactorial stressor. Along with cardiovascular, endocrine and metabolic aberrations, it affects the immune response of an animal and increases susceptibility to infection. Therefore, strict conditions for air transport of every animal species have been imposed. Transport of only healthy animals is approved, as it is necessary to prevent the spread of disease during transport and to provide satisfactory environment for animals to be transported.

KEY WORDS

animals, air transport, health, welfare, stress

1. INTRODUCTION

Animals are being transported by air for various purposes - exhibitions, fairs, races, evaluations, breeding, zoos or other reasons. It is crucial that they arrive to their destination healthy. Such transport is a multifactorial stressor; noise, vibration, ventilation, in-transit space allowance, journey length, and water and food deprivation being potential individual stressors [1,2]. Stress has been defined as a state in which an animal is required to make abnormal or extreme adjustments in its physiology or behaviour in order to cope with adverse aspects of its environment and management [3]. Fear is a very strong stressor. Both previous experience and genetic factors affecting temperament will interact in complex ways to determine how fearful an animal may become when it is handled and transported [4].

The negative specifics of air transport related to other means of transport are: variable baric environment, high acceleration/deceleration during takeoff and landing, high noise and vibration levels, variable aircraft attitude during flight causing spatial disorientation, limited air-conditioning and ventilation capacities. On the other hand, due to its speed, this means of transport allows the required time to be limited to an acceptable level.

The animals transported by air can be divided in two categories:

1. Pets (mostly cats and dogs) transported on commercial passenger flights, usually in baggage holds of airliners.
2. High-value species transported as commercial cargo on dedicated cargo aircraft.

The first category of animals is of particular interest to the commercial airlines because they mostly belong to the segment of passengers most interesting to the airlines (usually First or Business class), so competent handling of these animals is an effective image-booster for every airline.

The second category of animals is of interest to commercial cargo operators. In this category, a distinction can be made between animals transported for sale (usually broiler-chicken, species for Zoos, etc.) and high-value animal specimens transported for racing, breeding, exhibitions or other purposes.

2. MECHANISMS OF STRESS

The changes that occur in response to stress are termed *general adaptation syndrome* (GAS). They are, in the main, non-specific physiological and biochemical changes that take place in three phases:

1. The alarm reaction.
2. The stage of resistance during which adaptation to achieve homeostasis under the changed circumstances is taking place.
3. The stage of exhaustion when adaptation has ceased to be adequate and homeostasis is not achieved.

The changes occurring during the GAS are neither species-specific nor stressor-specific, and similar responses are provoked in higher and lower vertebrates [5].

The events comprising GAS are mediated by a hormonal and nervous reaction. Output of adrenocorticotropic hormone and corticosteroids result in Na^+ and Cl^- ion retention while K^+ ions are excreted. Mechanisms of stress have been investigated in a number of animals subjected to transport stressors. In sheep an apparent increase of plasma concentration of cortisol was noted during road travel [1,6,7]. During transport pigs show weight loss, increased circulating concentrations of catecholamins, cortisol and creatine phosphokinase. Pigs are especially susceptible to transport stress because they suffer from travel sickness [8,9]. Animals trained and habituated to a squeeze chute may have baseline cortisol levels and be behaviourally calm, whereas extensively reared or wild animals may have elevated cortisol levels in the same chute [4]. The use of electrolyte therapy may be an effective means of reducing stress in transported cattle [2].

During stress there is an increase in blood glucose levels and in nitrogen metabolism, the thyroid is stimulated and thyroxin output increased. In the blood, lymphocytopenia and neutrophilia are apparent. The sympathetic nervous system also reacts, resulting in splenic contraction, increased respiration rate and rise in blood pressure. A rise in core temperature was noted for sheep after a long transport [10], also observed in broiler chickens as a consequence of inappropriate ventilation during transport [11]. If stress affects the immune responsiveness of an animal in a deleterious manner, then an increase in susceptibility to infection must be expected. Therefore, immunosupression, osmoregulatory derangement, reproductive failure and metabolic aberration are important results of inadequate stress management [3]. Along with cardiovascular, endocrine and haematological parameters, stress conditions (transport) also elicit responses in behavioural, renal and gastro-intestinal parameters in dogs [12]. As stress responses are generally considered adaptive in natural situations, total lack of stress during air transport would be an impossible goal. However, prolonged or severe acute stressors can result in increased susceptibility to disease, affect reproduction of animals, poor growth and even direct mortality [13,14]. These problems often become apparent only after the animal has been sold as a pet [15]. Mortality is higher in more stress-susceptible breeds and at higher ambient temperatures [9]. Mortality of breeding chicks air-transported to distant destinations is noted as a consequence of oxygen shortages that stems from the lack of mechanical ventilation in holding areas such as warehouse and cargo compartments of aircraft. Such vulnerable periods tend to occur around departure time when the cargo door is closed, but the compartment has not been pressurised, and *vice versa,* upon landing [16]. Also associated with long-journey air transport is severe body dehydration [17]. Efforts should be made to limit total transport time of young chicks within 45 hours [18]. The same authors note that the air-exchange rates necessary in air transport sometimes exceed the literature recommended minimum ventilation rates in the aircraft.

All of these factors have to be taken into account during the transportation preparation process in order to secure the conditions for animal wellbeing.

3. CONDITIONS FOR AIR TRANSPORT OF ANIMALS

According to the Croatian Veterinary Act (Zakon o veterinarstvu) and its Regulations for Transport of Animals in Public Transport and Air Traffic (published in the Croatian Official Gazette No. 97/98), the animals that can be transported by aircraft include: domestic animals (ungulata and hoofed animals), game and beasts, poultry and feathered game, rodents, snakes and reptiles, fish, crabs and other aquatic animals, insects and pets (cats, dogs etc.). They can be transported in passenger aircraft, in baggage sections and with certain conditions also in the cabins, and have to have a certificate of their health condition.

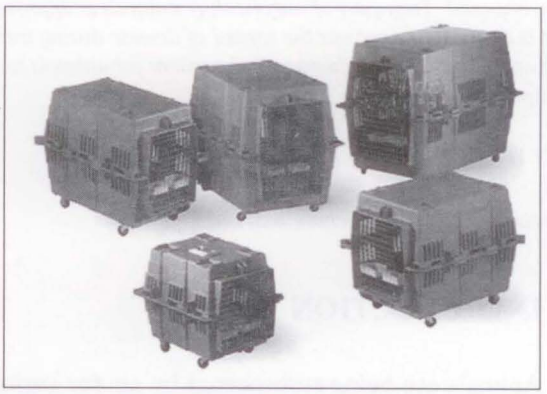

Figure 1 - Standard airline pet transport kennels

If transported in baggage sections they have to be placed in containers-kennels (Fig. 1.) that are defined by the species involved. Pets are allowed to cabin provided they are in appropriate basket or cage and that the weight of the animal together with the basket and food does not exceed 10 kg.

Air transport of animals on the international level is regulated by the IATA Live Animals Regulation (IATA Resolution 620, Attachement "A") that has also been accepted by the Convention on International Trade in Endangered Species of Wild Fauna

and Flora (CITES – Convention Resolution 4.20) and the Office International des Epizooties (OIE) as the guidelines in respect of transportation of animals by air. This Regulation has also been used by the Council of Europe to set the codes of conduct for the international transport of farm animals and the European Community has adopted it as minimum standard for transporting animals in containers, pens and stalls.

The Regulations cover responsibilities of the shipper, the carrier, specific government regulations by countries, the transport procedure and standards, container standards, documentation, labelling and classification of animals.

The animals should be loaded and unloaded quickly and efficiently in order to prevent hurting, suffering and contact with other animals. The aircraft must have solid boxes with padded sides. It is required that it is equipped with temperature regulating systems, ventilation and adequate lighting.

Every hoofed animal is to be loaded into aircraft in a single special box, unforged and tied. Tendons of horses of high value and racing horses are to be bandaged. Such as well as temperamental and excitated horses can be tranquillised during the flight. There are exact regulations on the floor surface for each hoofed animal according to species and weight, but those can be extended by 10% for adult horses, 20% for young horses and up to 50% for gravid, sport and valuable specimens. Takeoff and landing of the aircraft transporting horses should be gentle and gradual. Recommended speed is 300-500 km/h, altitude up to 2,500 m, the optimum flight altitude being 1,000 to 1,500 m (obviously, meant for unpressurised aircraft only; authors' remark). When hoofed animals are jet transported, the allowed speed and altitude are much higher, for jet aircraft are equipped with mechanisms for air pressure regulation [19].

Cattle are to be transported in common boxes if they are dehorned, otherwise in separate boxes, males always apart from females. The floor surface is regulated by law, but can be extended up to 50% for valuable and gravid species. Those values vary from country to country [20].

Little animals (birds, dogs, cats, hares, rabbits, laboratory animals etc.) should be placed in cages/boxes firm enough not to break, spacey so that animals can lie down, having a food vessel, with absorbent unleaking sides and bottom, airy and constructed in such a way that animal's body parts cannot protrude.

Beasts and wildlife should be placed in containers/cages constructed to ensure secure transport of animals and protection of people handling them. All animals should be provided with food and water prior to loading. It is important that aircraft be cleaned and disinfected before and after animal transport because bacteria, viruses, fungi and parasites excreted by animals may contaminate surfaces and appear as a genuine danger, even if veterinary controls are performed continuously [21]. Aircraft for such purposes should be washed with cold water only and disinfected with 3 or 5% formaldehyde [19].

In order to ensure the welfare of the animals to be transported, an IATA Live Animals Acceptance Check List should be closely followed (Att. 1.). This pre-set procedure ensures the avoidance of any unwanted hindrances to the transportation process that might inflict unnecessary suffering or injury, both to the animals and to the personnel handling them.

4. CONCLUSION

All forms of transport are potentially hazardous for animals, regardless whether travel is between or within countries, or by road rail, sea or air. Having the welfare of animals in mind, and disregarding other (economic) issues, some specifics of air transport relating to other means of transport should be factors to consider when choosing means to translocate particular animal species. Prior to transport by air, animals are already transported by road or rail or by some other means, therefore they have to endure double loading/unloading, and they are twice introduced to a new stressful environment. The danger of bruises and fractures that could be associated with takeoff/landing, pressure change and noise higher than that in the truck/ship/train, are also matters to be considered.

However, experience shows that animals can be transported under suitable conditions without harm to their welfare, which depends on understanding of their welfare needs and of the biological basis for disease, stress and suffering [22]. Therefore, it is necessary to ensure the following: only healthy animals are to be transported; precautions should be taken to prevent the spread of disease during transport; satisfactory environments, feed, watering and the rest are to be provided to animals before, during and after transport; only qualified attendants and handlers should be used [23].

SAŽETAK

DOBROBIT ŽIVOTINJA U ZRAČNOM PROMETU

Dobrobit životinja postaje sve značajniji faktor sa ekonomskog aspekta, zbog velikog utjecaja na image zračnog prijevoznika kod putnika. Znatna pozornost mora biti posvećena životinjama tokom transportnog procesa kako bi se zadovoljili zahtjevi značajnog segmenta putnika, posebno putnika Business/Prve klase koji putuju s kućnim ljubimcima ili važnim korisnicima usluga prijevoza trkaćih konja, pasa, zooloških životinja i dr.

Zračni prijevoz životinja, pored svojih prednosti, može predstavljati prijetnju njihovom zdravlju i dobrobiti obzirom da

može biti značajan izvor stresa. Pored mogućih kardiovaskularnih, endokrinih i metaboličkih poremećaja, može djelovati i na imuni sistem, te povećati podložnost životinja infekcijama. Zbog toga su postavljeni strogi zahtjevi za zračni transport svake pojedine vrste životinja.

Dozvoljen je prijevoz isključivo zdravih životinja, kako bi se spriječilo širenje zaraznih bolesti i osiguralo odgovarajuće okruženje tijekom transporta.

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ATTACHMENT 1. IATA LIVE ANIMALS ACCEPTANCE CHECK LIST

Air Waybill No.: _____ Origin: _____ Destination: _____

Note 1: Prepare form in duplicate.

Note 2: If goods are rejected, hand the original of this form to the Duty Officer and show the shipper's and agent's name below.

Note 3: Never reject a shipment until all items have been checked.

Note 4: If goods are accepted, attach the original of this form to the air waybill. The duplicate must be placed on the appropriate file.

Note 5: Answer "not applicable" only where an "N/A" box is provided.

Note 6: If any question is answered "NO", do not accept the shipment and give the duplicate copy of this form back to the shipper or agent together with the consignment.

General Acceptance	Yes	N/A	No
1. Have advance arrangements/bookings been made with all the carriers participating in the carriage of the live animals?	☐		☐
2. When laboratory animals, such as monkeys, which may carry diseases communicable to human are being shipped, has the carrier(s) been advised in order to make the necessary arrangements?	☐	☐	☐
3. Have advance arrangements been made at the airport of destination, i.e. for quarantine and delivery?	☐		☐
4. In the event of attendants accompanying the animal(s), have advance arrangements been made with all the carriers concerned?	☐	☐	☐
5. Does the shipment comply with current regulations in force at transit stations?	☐		☐
6. Where applicable, have carrier/governmental exceptions been complied with?	☐	☐	☐
Air Waybill			
7. Are the live animals the only entries on the air waybill?	☐		☐
8. Are all flight numbers for which bookings are held for the entire routing indicated?	☐		☐
9. Is the quantity of animals in the consignment, as well as their common names, which must as far as possible correspond with that listed in the IATA Live Animals Regulations, shown in the "Nature and quantity of goods" box?	☐		☐
10. Are all relevant permits, including CITES where necessary, licences and certificates required for export, transshipment and import, securely attached to the air waybill and copies of those required affixed to the container?	☐	☐	☐
Shipper's Certificate			
11. Is it completed in full and in duplicate?	☐		☐
12. Does the description and quantity of animals agree with the information on the air waybill?	☐		☐
13. Is it signed by the shipper or his authorised agent? (Check that this is not an IATA cargo agent, consolidator, forwarder or indirect carrier.)	☐		☐
Container			
14. Does it comply with the specific container requirement(s) as detailed in the IATA Live Animals Regulations?	☐		☐
(a) Is the size suitable for the particular type of animal?	☐		☐
(b) Does it provide for sufficient ventilation?	☐		☐
(c) Is the construction adequate?	☐		☐
(d) Does it contain adequate handholds/lifting devices to facilitate handling and to prevent the handler from coming into close proximity of the animal(s)	☐		☐
(e) Is it leak and escape proof?	☐		☐
(f) Is the container clean?	☐		☐
(g) Does it contain sufficient absorbent material? (Check that this is not straw, as some countries prohibit the importation of straw.)	☐		☐
(h) Does the container have suitable feeding/watering facilities?	☐	☐	☐
Labelling and Marking			
15. Is the consignee's name, street and city address as per air waybill shown on each container?	☐		☐
16. Is the correct number of "Live Animals" and "This Way Up" labels attached to each container?	☐		☐
17. Has each "Live Animals" label been completed, i.e. reflecting the correct contents?	☐		☐
18. For live animals which can inflict a poisonous bite or sting, is the container marked in bold letters "POISONOUS"?	☐	☐	☐
19. For Specific Pathogen Free (SPF) animals for laboratory use, does the container bear "Laboratory Animals" labels in addition to the labels required in question 16 above?	☐	☐	☐
20. When the animal has been tranquilised, have details been affixed to the container, i.e. time given, type of sedation, dosage and estimated duration?	☐	☐	☐
Feeding and Watering			
21. If it is required that the animal(s) must be fed/watered en route, have arrangements been made by the shipper/carrier with the other carriers/personnel downline?	☐	☐	☐
22. Are feeding instruction affixed to the container and are supplies (if required) attached to the outer topside of the container?	☐	☐	☐
23. Does any food or bedding (if provided) for the animal(s) contravene any regulations of the country(ies) of transit or importation?	☐	☐	☐

Comments: _____

_____

_____

CHECKED BY: _____

SIGNATURE TIME DATE

_____

NAME (BLOCK LETTERS) AT (STATION)

SHIPPER/AGENT: