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Scientific criticism

WHY VETERINARIANS SHOULD UNDERSTAND ANIMAL BEHAVIOR

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Abstract: Behavior is the fastest way of animal adaptation to changes that occur in its organism or in its habitat. This is a visible feature of animals. Therefore, veterinarians can use knowledge about animal behavior in many branches of veterinary practice and veterinary science. Knowledge of animal behavior can also be helpful in diagnostics in veterinary practice. In addition, knowledge of animal behavior can be applied in all animal treatment procedures, as well as in their restraint, animal examination, animal learning and training, animal tracking, feeding, reproduction and many other activities. Accommodation systems and all kinds of enrichment of living conditions are part of applied animal behavior science. Veterinarians must know how to prevent behavioral disorders and pathological forms of animal behavior, but also how to treat them. They also need to know how to apply knowledge about animal behavior to protect animal welfare. Applied animal behavior science can be applied to control game animals and pests in a more humane way as well as in conservation of species. There are many other examples of application of animal behavioral knowledge in veterinary practice, as it is presented in this paper.

Key words: animal, behavior, application, veterinary practice

INTRODUCTION

Veterinarians come in contact with different animal species and different categories of animal use. They prevent the occurrence of illnesses and injuries and they treat animals used for the production of food and natural fibers (farm animals), official / working animals and animals being transported.

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Veterinarians examine animals that have arrived at slaughterhouses and those found in cattle depots, animals used for fun, entertainment and recreation, or those kept by people in private collections such as freshwater aquarium fish, reptiles, amphibians, and even insects (“hobbyists”). Veterinarians also take care of welfare and health of the animals which are kept in zoos, in scientific institutions and in plants for the production of biological preparations and medicines or in educational institutions. They also treat abandoned pets, as well as animals in shelters, wildlife in natural habitats, and more recently animals used in zootherapy and animotherapy (Fine, 2010). Also, veterinarians are often in a position to propose decisions about the

end of life of animals (Knesl et al., 2017). A change in behavior of animals is the reason why many owners get worried and visit a veterinarian. This change in animal behavior is the initial trigger for the first contact between a client and a veterinarian. In the 21st century, when a special area of veterinary medicine, called animal behaviorism (American terminology), ethology (European terminology), or “Applied Animal Behavior Science” is widely established, a veterinarian is required to know it well and apply it in everyday practice. Its application is of undeniable significance for the reputation, competitiveness and sustainability of the veterinary profession (Loftus, 2014).

WHAT IS ANIMAL BEHAVIOR?

There are different definitions of animal behavior. Behavior is the physiological function of an organism, which, unlike other functions, is clearly visible. It is every activity of the animal, including phases in which animals are inactive or sleeping. Unlike other physiological functions, behavior can be estimated by the naked eye. Like all other physiological functions, animal behavior has its role, but it also has its cause and reason as well as its goal.

Behavior is the fastest way of animals' responding and adjusting to changes in the living environment and within the body, and therefore it's the fastest way of preserving the homeostasis and the integrity of the organism. The goal

of behavior is to achieve the feeling of physical and thermal comfort, pleasantness, physical and emotional satisfaction of the animal.

The cause of behavior is always a necessity, that is an instinct of an animal. Activated instincts cause certain emotions, and emotions result in a certain form of animal behavior. Instincts are driving forces of the nine basic forms of animal behavior, such as: reactivity, rest and sleep, movement, hygienic behavior (includes hygiene of skin and skin covering, hygiene of habitats, hygiene of cubs, defecation and urination, thermoregulation and stretching), feeding, investigative and territorial behaviour (including game),

social (including communication) and reproductive behavior (behavior including sexual instinct, foreplay, copulation, pregnancy behavior in females, partus, parental behavior, or nursing). Animal instincts can not be suppressed. They are innate and animals are always motivated to satisfy them. By the way in which it is kept, an animal can only be prevented from satisfying the instinct in a natural way, that is by applying some of the physiological strategies. Disabling animals to meet their innate needs in a natural way causes scarceness which leads to frustration. The result of long-term frustration is the behavioral change in the direction of the development of disorders and pathological behaviors. Instincts cannot be programmed or reprogrammed. They are genetically inflexible and are common to all animals.

The cause of behavior is always the stimulus that is mostly found in the outer environment, but it can also come from the body itself. By their very nature, stimuli can be biotic and

abiotic. Consequently, behavior clearly shows how an animal responds to other animals of the same species, different species, people or objects, materials, and phenomena in its living environment.

There are also highly specific forms of behavior that are typical for certain species. That is why a man who keeps animals in captivity has to provide all necessary conditions for the expression of highly specific forms of behavior.

The consequence of behavior is always some kind of emotion, feeling, or experience of an animal. Animals learn by associating the consequences of behavior with the activities that have taken part in the manifestation of behavior. It is important for veterinarians to understand animal emotions. Emotions are not as noticeable as behavior. Behavior is an indicator of emotions (Beausoleil et al., 2016).

APPLICATION OF KNOWLEDGE ABOUT ANIMAL BEHAVIOR IN VETERINARY PRACTICE

Towards the end of the last century it was pointed out that behavioralism or ethology (applied animal behavior science) should be represented in veterinary medicine curriculum similarly to anatomy and physiology (Sambraus, 1998). The German scientist (Sambraus, 1998) emphasized the importance of ethology. In many countries of the European Union, curriculum reform has come to life, while that still hasn't

happened in the countries of the Balkan region.

Knowledge about animal behavior is applicable in all areas of veterinary profession in which veterinarians come into direct contact with animals. First, it is applicable in the way of approaching and restraining in all categories of animal use. In these cases knowledge of behavioralism is applied to eliminate

or minimize the application of physical force in these activities and in their humanization. Also, harsh and non-aesthetic methods of catching stray animals in public places should be replaced with methods without physical force. Knowledge about animal behavior is also applied for the safety of work and the reduction of injuries to veterinarians, staff, other animals or the animal with which the veterinarian, owner or worker is in contact. Today, a veterinarian is required to understand animal behavior that is, the behavior expressed by “body language” or grimaces (Di Giminianii sar., 2016). These “intentions” are the result of certain emotions, and their result will be a specific form of animal behavior. It is also necessary to know body language and grimaces for diagnostic purposes in order to free the animal from unpleasant emotional conditions caused by illnesses or injuries, especially the pain (Di Giminiani et al., 2016). It is also necessary to know them during training of animals (Hasegawa et al., 2014) in order to see what is easy or difficult for animals to learn, what they find confusing, frightening, attractive, motivational, and what keeps them from gaining new skills. An unpleasant emotional experience such as pain is almost always associated with a reduction in behavioral activity (Viscardi et al., 2017).

Knowledge about animal behavior is also applicable in the field of veterinary prevention in all categories of animals use. The design of animal facilities

should be in accordance with the behavioral forms typical for certain animal species (Balcombe, 2006). Therefore, it is not a surprise that today’s legislation requires animals to be housed in a “naturalized” environment, as is the case of laying hens, for example, a cage should be equipped with things for climbing, hiding, poking about and plucking. (Costa et al, 2012).

Behavioral knowledge is an important “diagnostic tool” in the hands of a veterinarian. In certain animal diseases, the animal ceases to manifest certain forms of behavior or minimizes them or exposes them in some other way, at some other time, and in some other place compared to the usual. This can all point to the presence of acute disease, and the goal of changing behavior is simply saving the energy which organism needs to “fight” with the cause of the disease and to accelerate the healing. In the chronic course of the disease, certain physiological forms of behavior are manifested in a different way than the usual one, in the attempt of an animal to reach the state of comfort, comfort, safety and satisfaction. Also, knowledge of animal behavior allows veterinarians to timely diagnose unpleasant physical and emotional experiences such as anxiety, fear, stress, conflict, frustration, boredom, suffering, etc. Otherwise, primary disorders and pathological behaviors may develop (Kiley-Worthington, 1977; Mench, 1998). Secondary disorders and pathological behaviors are always an integral part of

the symptomatology of another organ or organ system dysfunction.

Animal welfare assessment is based on the evaluation of direct and indirect indicators, of which animal behavior is a direct indicator (Fraser, 2009), taking into account manifestation of physiological behavior patterns, the presence of disorders and pathological forms of behavior, behavior towards animals in the environment, and animal behavior towards humans.

Behavioral knowledge can be applied not only in the assessment of animal well-being but also in ensuring animal welfare and it is one of the main mechanisms of its provision. It is enough to know what an animal needs, on the basis of its behavior and to ensure what it is missing, and the well-being is already achieved (Dawkins, 2004).

Today, there are numerous examples that show in what ways knowledge about animal behaviour is applied in veterinary medicine. Veterinarians who know the behavior of animals are better clinicians and are able to influence the preservation of the owner-animal relationship, which is of particular importance to animals used as pets. Disorders and pathological forms of pets' behavior are often the cause of their abandonment, sheltering, and sometimes premature euthanasia. That is why timely diagnosis and treatment of disorders and pathological forms of behavior is crucial for maintaining the relationship between owners and pets (Seibert and Landsberg, 2008; Sherman and Serpel, 2008).

Behaviorists can work in clinical practice, but they can also work in areas covered by applied veterinary science. In clinical practice they can work with pets, animals in sports, farm animals, animals in zoos and experimental animals. In clinical practice, the task of behaviorists is to prevent the occurrence of disorders and pathological forms of animal behavior, to recognize the occurrence of these disorders in time and to know how to treat them. If veterinarians are not able to treat disorders and pathological behaviors themselves, their duty is to guide their clients to experts who know this. Certainly, the medication treatment of disorders and pathological behaviors of animals, or psychopharmacotherapy is still in the hands of veterinarians. Psychopharmacotherapy isn't applied to farm animals used in food production. However, in all listed animal categories of use, veterinarians can work on prevention of disorders and pathological behaviors. One way is to "enrich living conditions" of animals. Enrichment of living conditions is carried out in all categories of animal use. This strategy involves placing materials, substrates and objects into the living space of animals that motivate animals to show better or worse behavior for their species, but also other behavioral activities. Enrichment of living conditions can be structural, nutritional, manipulative, sensory (visual, auditory, gustatory, tactile) and social (Young, 2003).

Behaviorism is applied science. Therefore, veterinarians can work

in pest control (Clapperton, 2006; Meerburg et al., 2008), wildlife control or bioconversion (Berger-Tal et al., 2016; Caro, 2016; Merrick and Koprowski, 2017) and in the search for new drugs (Hanell and Marklund, 2014). In recent times, behaviourism

and ethology are becoming more and more technologically important and are referred to as “behavioral engineering”. However, ensuring animal welfare will stay the primary task of behaviourism and ethology.

CONCLUSION

Knowledge of animal behavior and its application in everyday work guarantee the reputation and sustainability of the veterinary profession.

The application of animal behavior knowledge in pre-clinical and clinical practice can also be applied in veterinary prevention, in designing and building

accommodation systems for different categories of animal use, in all animal procedures as well as in assessing and providing animal welfare.

It is necessary to include behaviorism or ethology in veterinary medicine curriculum in our county, as it is the case in Western countries.

REFERENCES

1. Balcombe J.P. (2006): *Laboratory environments and rodents' behavioural needs: a review*. *Laboratory Animals* 40: 217–235.
2. Beausoleil N.J., Stratton R.B., Guesgen M.J., Sutherland M.A., Johnson C.B. (2016): *Scientific evaluation of animal emotions: Brief history and recent New Zealand contributions*. *Journal of New Zealand Studies* NS22: 63-71.
3. Berger-Tal O., Blumstein D.T., Carroll S., Fisher R.N., Mesnick S.L., Owen M.A., Saltz D., St. Claire C.C., Swaisgood R.R. (2016): *A systematic survey of the integration of animal behavior into conservation*. *Conservation Biology* 30: 744–753.
4. Caro T. (2016): *Behavior and conservation, conservation and behavior*. *Current Opinion in Behavioral Sciences* 12: 97–102.
5. Clapperton B.K. (2006): *A review of the current knowledge of rodent behaviour in relation to control devices*. Department of Conservation, Science & Technical Publishing, Wellington, New Zealand.
6. Costa L.S., Pereira D.F., Bueno L.G.F., Pandorfi H. (2012): *Some aspects of chicken behavior and welfare*. *Brazilian Journal of Poultry Science* 14: 159-164.
7. Dawkins M.S. (2004): *Using behaviour to assess welfare*. *Animal Welfare* 13: S3–S7.

8. Di Giminiani P., Brierley V.L.M.H., Scollo.A., Gottardo F., Malcolm E.M., Edwards S.A., Leach M.C. (2016): *The Assessment of Facial Expressions in Piglets Undergoing Tail Docking and Castration: Toward the Development of the Piglet Grimace Scale*. *Frontier in Veterinary Science* 3: 100. doi: 10.3389/fvets.2016.00100.
9. Fine A. (2010): *Handbook on Animal-Assisted Therapy*, 3rd Edn. Academic Press, London.
10. Fraser D. (2009): *Animal behaviour, animal welfare and the scientific study of affect*. *Applied Animal Behaviour Science* 118: 108–117.
11. Hanell A., Marklund N. (2014): *Structured evaluation of rodent behavioral tests used in drug discovery research*. *Frontiers in Behavioral Neuroscience* 8: 252. doi:10.3389/fnbeh.2014.00252.
12. Hasegawa M., Ohtani N., Ohta M. (2014): *Dogs' Body Language Relevant to Learning Achievement*. *Animals* 4: 45-58.
13. Kiley-Worthington M. (1977): *Behavioural problems of farm animals*. Oriell Press Ltd, Charleville, County Cork, Ireland.
14. Knesl O., Hart B.L., Fine A.H., Cooper L., Patterson-Kane E., Houlihan K. E., Anthony R. (2017): *Veterinarians and Humane Endings: When Is It the Right Time to Euthanize a Companion Animal?* *Frontier in Veterinary Science* 4: 45. doi: 10.3389/fvets.2017.00045.
15. Loftus L. (2014): *Behavioural considerations in veterinary practice*. *Veterinary Nursing Journal* 29: 166–169.
16. Marchant-Forde J.N. (2015): *The science of animal behavior and welfare: challenges, opportunities, and global perspective*. *Frontier in Veterinary Science* 2: 16. doi: 10.3389/fvets.2015.00016.
17. Meerburg B.G., Brom F.W.A., Kijlstra A. (2008): *The ethics of rodent control*. *Pest Management Science* 64:1205-1211.
18. Mench J. (1998): *Why it is important to understand animal behavior*. *ILAR* 39: 20-26.
19. Merrick M.J., Koprowski J.L. (2017): *Should we consider individual behavior differences in applied wildlife conservation studies?* *Biological Conservation* 209:34-44.
20. Sambraus H.H. (1998): *Applied ethology—it's task and limits in veterinary practice*. *Applied Animal Behaviour Science* 59:39-48.
21. Seibert L.M., Landsberg G.M. (2008): *Diagnosis and management of patients presenting with behavior problems*. *Veterinary Clinicians of North America. Small Animal Practice* 38: 937-950.
22. Sherman B.L., Serpell J.A. (2008): *Training veterinary students in animal behavior*

- to preserve the human-animal bond*. Journal of Veterinary Medical Education 35: 496-502.
23. Viscardi A.V., Hunniford M., Lawlis P., Leach M., Turner P.V. (2017): *Development of a Piglet Grimace Scale to Evaluate Piglet Pain Using Facial Expressions Following Castration and Tail Docking: A Pilot Study*. Frontier in Veterinary Science 4: 51. doi: 10.3389/fvets.2017.00051.
24. Young R.J. (2003): *Environmental Enrichment for Captive Animals*. UFAW Animal Welfare, Blackwell Science, Limited, Oxford, UK.

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