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An Overview of the Past of Animal Domestication

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Abstract

The study aimed to explore the domestication of animals concerning their advantages, disadvantages and history. The article is based on literature survey. Going through the websites of different academic search engines and agencies literatures were deeply analyzed. There are many breeds of few species of domesticated animals. Pople have been using domesticated animals for many purposes like guard, porter, labor, friends, food, fertilizer, as ornament of houses, as income source, for study and research, experimental purposes, biotechnology, improving the variety and beautify the nature. The study also found that most of the domestic animals of today were domesticated from 11,000 years ago. Dogs were domesticated 35,000 years ago, goat, pig, cow, sheep and other cattle were domesticated in 9500 Before Common Era (BCE) and cats in 7500 BCE. Horse was domesticated 5500 years ago, chicken 4000 years ago and insects were domesticated 5000 years ago. Domestication of animal is essential for the conservation of genetic resource too.

Keywords: Advantages, disadvantages, domesticated animals, history

Article Information

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Introduction

Domestication is the process of adjustment of animals to agro-ecological environments and human prioritized by anthropogenic selection (Stetter, 2017). Domestication refers to the process of rearing the animals in artificial habitat, captivity, selectively breeding them for human purposes, and controlling their food supply, reproduction, and other aspects of life, thus creating a dependency on humans for survival (De

Mello, 2021). Further, domestication can be defined as the intimate relationship between other species and human that has proven the most successful evolutionary strategies for the survival of species, in the world dominated by human species (Oltenacu, 2004).

Actually, it is the adaptation of animals (especially wild) for human consumption and utilization. Domestic species are raised for a variety of purposes including food, employment, clothing, medicine, and many others. Human must raise and care for domesticated plants and animals (Stetter, 2017).

Domestication is a relationship of multiple ways in which humans take control of the reproduction and care of another group of species to ensure a more resources from them (Zeder, 2015). The study of animal enclosure and domestication over time reveals the various human drives that underpin these actions. Animals can be cherished companions or sources of food. These ideas accompanied by opposing moralities and providing a subject to investigate into the dynamics of power and possession at local, regional, and global scales (Anderson, 1998). Today in the world the most common domesticated mammals belong to 14 species. But there are many breeds of them. For example sheep has 850 breeds, goat 320 breeds, cow 815, pig 350, horse 350 and water buffalo has 70 breeds (Teletchea 2019).

Domesticated animals do not exist in the wild. Escaping from the capture of human they do not return to the wild habitat. Animal domestication is a difficult task. Herbivores that graze on vegetation are the easiest to domesticate because they are the easiest to feed: they don't require humans to slaughter other animals or plant special crops to feed them. Cows, for example, are quite easy to domesticate. Because grains are precious and must be cultivated, animals that consume grains are harder to domesticate than herbivores that graze. Chickens eat seeds and grains and are herbivores, so they are also considered as easy animals in the regards of domestication.

People have bred domesticated animals to promote specific features throughout history. Domestic animals are chosen for their calm demeanor and ability to procreate in confinement. Their ability to withstand sickness and thrive in harsh environments is also important. Domestication is of particular relevance to us as the most significant development in Holocene human history. Human raised only small number of animals and they spread throughout world with human, it is more interesting (Diamond, 2002)

Animal species that are housed in conditions that stray too much from their ecological range are bound to perish. It is beneficial to rear nidifugous chick species at temperatures greater than those found in at least part of their natural habitat. Symbiosis is a term used to describe the relationship between people and domesticated animals (Ducos

& Matthews, 2014).

The history of domestication is very longer and clear. But over the course of 11,000 years, humans have domesticated a vast range of animals. Domestic animals have become deeply entwined into the human economy, society, and religion. They are raised for food, secondary products, labor, and companionship, transporting, gaming etc. Humans, using increasingly advanced technologies for breeding and rearing animals in captivity, continue to put more and more species under their control, resulting in animal domestication (Zeder, 2012). Some researchers showed their interest how the wild animals could be raised but they did not point out actual date of domestication of particular animals. Raising the research question of advantages, disadvantages and history of rearing the animals this research work is done. It is hoped that it investigates them and fills the thirst of curiosity belonging the domestication of animals.

Methods

The published literatures were searched through websites of academic searching engines and agencies like Google scholar, Pubmed, Scopus, JSTOR. About 86 published literatures were downloaded and overviewed. Some literatures were gone through whole text and abstracts and chapters of some literatures were studied. The body of 40 literatures were analyzed and concluded after discussions.

Results and Discussion

The domesticated animals are far different than the wild ones. They have some distinct characters. Darwin (1859) recognized the minimal number of characteristics that distinguished domestic creatures from their wild forebears. He reported some differences in his report. He was also the first naturalist who distinguished between conscious selective breeding (in this, humans actively seek out desired features) and unconscious selective breeding (in which traits emerge as a result of natural selection or selection on other traits)(Diamond,1997). These characteristics differentiate domestic animals from their wild ancestors throughout time. Gray wolves were most likely used to domesticate dogs. Dogs are now considered a separate species from gray wolves (Dunn, 1989). Between domestic and wild populations, there is a genetic difference. There's also a big contrast between the domestication features and the improvement traits that have emerged since the wild-to-domestic population split (Larson, 2014).

Researchers launched their works on the way to find the pathways of domestication. There are three proposed major pathways that most animal domesticates followed into domestication. The first one is commensalism which means they are adapted to a human niche (dogs, cats, fowl) not directly sharing the materials. The second is, prey animals sought for food. For example sheep, goats,

cattle, water buffalo. The third pathway is animals targeted for draft and non-food resources (horse, donkey, camel)(Frantz, 2015).

Advantages from domestication

People have been taking many advantages from animal domestication. Human used them as guard, porter, labour, friends, for food, as ornament of houses, for fertilizer, as income source, for study and research, experimental purposes etc. , without domesticated animals human life won't be completed and satisfactory. On the other hand, livestock have made major contributions to biomedicine and have distinct advantages. There are two models of rearing the animals. They are human model and rodent model. Both the models are useful to humans because to size, low cost, and ease of genetic manipulation, and have contributed immensely to our understanding of human health and disease. The use of appropriate animal models, including those with agricultural relevance, continues to be critical in nutritional and biomedical research (Kues, 2004).

Some domesticated animals are important for improving animal production efficiency specially for improving nutrition. They are cattle, horses, pigs, sheep, goats, poultry, and aquatic species etc. On the other hand, next research on zoo and other exotic animals is critical for species conservation (Loi, 2007). Some countries developed their nation by rearing the animals even in this century. To reduce the poverty in global level, domestic animal research makes a significant contribution. It also improves human health, which is especially vital for developing countries (Randolph et al. , 2007).

Some researcher addressed that human kind can take more advantages over the animals by domesticating them but the nation should support the animal scientists. The active involvement of administrative and political leaders must necessary to secure the crucial funding , then, the funding will ensure a future cadre of well-trained animal scientists who can employ domestic animals to solve major challenges concerning with biological sciences, animal production, animal and human nutrition(Reynolds et al. , 2009).

Animal protein is in low supply all around the planet. In four ways, wild animal species can assist in the solution of this problem. The first way is rearing of wild ungulates. The domestication or semi-domestication of several ungulates could provide effective food conservation. The second, on many land regions, wild animal harvesting, whether through sport hunting, might produce more meat and other animal products than comparable quantities of farmed livestock. Wild animals, alone or in combination with domestic animals, may make the best use of a wide range of habitats. It is third way. Finally, the advantages of producing new genotypes through the cross between wild and domestic is examined in terms of

objectives, issues and expected benefits (Spillett et al. , 1975). There is the most probability in genetic research in domestic animals and improve genome which may be beneficial for human being. Some researchers like Yang focused the work on the genome. They expected to see widely utilized strategies resulting the potential opportunities. The utilization of these strategies offered to the field of targeted genome manipulation in domestic creatures (Yang et al. , 2012).

Regarding the testing of newly made cosmetics on domestic animals, some researchers, like Tresor de Beutat, provided the knowledge of topical treatment. It was the remarkable the use of products of animal origin with a scientific base which included expanded formulations for cosmetic and therapeutic purposes, designed to achieve the ideal of beauty and health in medieval women. Some of those elements are still evident in the 21st century (Betlloch et al. , 2014).

According to some authors, domestication is the best event of convergent evolution. They gave particular attraction of mind on the issues of research relating to the costs of domestication. And also on the issue of convergent evolution of genes between domesticated animals and humans (Wang et al . , 2014).

Drawbacks of domestication

Some philosopher argued that animal domestication is the domesecration because it extremely violates animal populations and environment. It made the human more corrupted and helped pave the way for societies steeped in conquest, repression, extermination, coerced, displacement and enslaved servitude, gender subordination, hunger and sexual exploitation (Nibret, 2013). A study published in 2016 indicated that humans have created very important impact on genetic diversity and extinction rates of animals which includes then megafaunal extinctions. The domesticated ecosystems had destroyed the habitat and extinctions, which began in the Late Pleistocene along with the domestication (Boivin et al. , 2016). Domestication has resulted in the spread of zoonotic illnesses. Cattle, for example, have transmitted numerous viral poxes, measles, and tuberculosis to humans. Similarly, pigs and ducks transmitted influenza and some animals like horses have transmitted rhinoviruses. Domestic animals are the source of many parasites and carriers of parasitic diseases(Diamond, 1997). Domestication resulted in denser human populations, making it easier for infections to multiply, evolve, propagate, and eventually find a new host in humans (Caldararo & Leo,2012). One finding predict the chance of disappearing of domesticated animals due to over use and modification. The researcher estimation told that we may potentially lose most of the highly important farm animal genetic resources that humans have gradually selected over millennia within a few decades (Teletchea, 2019).

History of domestication

There are many logical events describing the history of domestication of animals. Most of the arguments conclude that with the evolution of human and entry on rearing and farming life the animals were domesticated. Cattle, sheep and goats etc. had already been domesticated in the Near East by the eighth millennium BC (Garrad et al. , 1996).

Another findings had stated that human started domesticating the plants as well as animals about 11,000 years ago (Normile et al. ,2002). Hundreds of land species and a few aquatic species were tamed over the next 9000 years. However, only a few land species have been domesticated since then. Domestication of aquatic—particularly marine—species, on the other hand, has increased enormously. Aquaculture is emerging as a major agricultural revolution with worldwide implications for humanity. An estimated 90% of the species currently grown on land had been domesticated by the year 2000. The growth in the number of domesticated land plant and animal species since the industrial revolution has been moderated (Duarte et al. , 2007).

Charles Darwin also gave interest on the domestication of animals. Darwin appreciated the wide variation within domesticated species, and throughout On the origin of species (Darwin,1859).

Some explained the domestication history as following. Favorable climatic circumstances and growing human populations during the starting of the Holocene, about 11,700 years ago led to domestication of plants and animals in small number. That allowed people for the supplement of the food which previously they were receiving through hunting of wild animals (McHugo et al. , 2019). Around 10,000 year back from present, a new way of life emerged for humans because there was occurrence of mass exploitation of plants and animals in one hand and on the other hand there was the starting of domestication of dense population of domestication (Machugh et al. , 2016)

During the Mesolithic Period, the first attempts at domestication of animals and plants appeared to have been made in the Old World. Dogs were initially tamed in Central Asia by people who hunted and gathered wild food plants at least 15,000 years ago. Before 9500 BCE, the first successful domestication of plants, as well as goats, cattle, and other animals, signaled the start of the Neolithic Period. (Britannica, 2020).

According to next view, Fertile Crescent 10,000 to 11,000 years back, goats, pigs, sheep, and cow and other cattle were to be domesticated. It was claimed as first domestication according to zooarchaeological studies. Two thousand years later, humped zebu cattle were domesticated. From wild hogs, pigs were domesticated that were genetically different from those found in the Fertile Crescent 8,000 years ago in East Asia. The horse was domesticated 5,500 years ago

on the Central Asian steppe. The chicken were domesticated 4,000 years ago in Southeast Asia and cat were domesticated at the same time in Egypt (McHugo, 2019).

One belief is that dog domestication most likely began during the Upper Paleolithic epoch, 35,000 years back from today, long before any other animal or plant was domesticated. To separate it from the genuine domestication process, which dated back known roughly 14,000 BC. This early, possibly unconscious process is referred to as proto-domestication (Galibert, 2011).

Regarding with the domestication of aquatic animals one research report described that,since the beginning of the twentieth century, approximately 430 (97 percent) of the aquatic species currently in culture have been domesticated. It was estimated 106 aquatic species being domesticated in the last decade . The number of domesticated aquatic species continues to rise at a rapid rate (Subasinghe, 2017).

One next ideology tells that the domestic pig was one of the earliest domesticated animals. Its domestication dated from the beginning of the Holocene, when so-called Neolithic tribes all across the Old World began to cultivate and when the main farmyard animals were domesticated (i. e. sheep, goat and cattle). Domestic pigs occupied a unique position among domestic animals (Evin, 2017).

Tarpans horses were known for their speed and the fineness of their hooves. In 1898, the last tarpan mare was slain on Ukrainian soil. The tarpan, unlike the Equas prezewalskii was the direct ancestor of all European domesticated horse breeds(Rudik, 2003). Horse domestication began in East Europe during the Neolithic period, and it expanded in waves to the other directions during the Bronze Age(Bokonyi, 1987).

Cats were considered to have been domesticated in 7,500 BC and are descended from five different varieties of wildcats. They had been used as pets and companions, but they had also been employed to manage mouse and rat infestations in the past. The cats first came into contact with humans after being drawn to rat-infested places where humans resided (Lear, 2012). Another finding tells that Eurasian wildcats were initiated domestication through natural process as by sympatric evolution (Driscoll et al. , 2009).

Most of the arguments believed that the bulk of domesticated animals and plants that serve humans today were picked and developed during the Neolithic Period, however, there were a few notable exceptions. The rabbit, for example, was not domesticated until the Middle Ages. A new sector of animal breeding was developed in the 20th century to obtain high-quality fur(Britannica, 2020).

Wolf was domesticated at the end of Mesolithic. During that period humans were nomadic hunter-gatherers. The first

cats' domestication begun among the earliest agricultural Neolithic settlements (Driscoll et al. , 2009). Not only the lifestyle and behavior the phenotypes and genotypes also had been significantly altered during their adaptation to the human niche over the last 15,000 years, including dogs, pigs, sheep, goats, cattle, and horses (Frantz et al. , 2020).

The invertebrates also had been domesticated along with large vertebrates. For almost 5,000 years back, two insects were tamed. They are silkworm and the western honey bee specially for commercial purposes (Bailey et al. , 2013).

Conclusion

This article was prepared with objectives to illustrate the idea about domestication of animals with their advantages to humankind and drawbacks to the animal world. It also explored the history of domestication. It is based on the literature review or theoretical research work. Going through the sites of academic search engines like google scholar, pubmed, scopus, JSTOR etc. , about 86 published literatures were overviewed. The contents of 40 literatures were analyzed.

Domestication is the process of adjusting the wild animals in human utility and making them able not to go their wild form. It is intimate and co-evolutionary relationship between human and other animals. The domesticated animals cannot return to the wild form and they are far different from wild forms in genetic regards. Most of them keep symbiotic and some commensal relation with human. Human used them as guard, porter, labor, friends, for food, as ornament of houses, for fertilizer, as income source, for study and research, experimental purposes, biotechnology, nutrition, improving the variety, beautify the nature etc. Without domesticated animals human life won't be completed, progressive and satisfactory. There are few domestic species but having hundreds of breed in the world today. On the other hand the domestication has negative impacts like mass extinction of animals, transmission of zoonotic, increment of competition etc.

Regarding with the history of domestication there was not clear picture but with the civilization of human it might be started. Most of the domestic animals of today were domesticated from 11,000 years ago. Dogs were domesticated 35,000 years ago, goat, pig, cow, sheep and other cattle were domesticated in 9500 BCE and cats in 7500 BCE. Horse was domesticated 5500 years ago, chicken 4000 years ago and insects were domesticated 5000 years ago.

The domestication supported for the betterment of human life, it is necessary but it should be managed, controlled and should not harm the wild form of life and should not extinct their genetic resources.

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