Page 444 to 446

Volume 2 • Issue 6 • 2019

Mini Review

Multidisciplinary Advances in Veterinary Science

ISSN: 2573-3435

Comparative Population-Genetic Research of Bulgarian Sheep Breeds

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Received: March 04, 2019; **Published:** March 15, 2019

Abstract

There is no archaeology or architecture for living monuments. But the trouble is that society has little to know what it is losing when a living monument collapses. And he must know that not only his story is mutilated, but his future is getting worse. It is difficult for me to determine what kind of masterpieces of nature are the animals of the autochthonous breeds, but there is no doubt in them the value of the eternal, always necessary for man. (Zdravkov G. "Livestock breeding" Journal, 9, 1975(in Bulgarian).

Volume 2 Issue 5 March 2019

Introduction

At the limit of the critical minimum of existence, there are hundreds of unique breeds of domestic animals. One of the main factors responsible for reducing biodiversity, besides environmental pollution, is the irrational agricultural activity, ignoring the genetic subdivision of the species and the structure of intra-species hereditary variability. Another factor that determines the reduction of genetic diversity is the uncontrollable import of high-yield animals and genetic introgression with native breeds, which also affects the national gene pool. The low number of local populations determines the high degree of inbreeding, which leads to an increase in the homozygosity of the recessive alleles, leading to near-depression (inbreeding depression). Inbreeding is a prerequisite for the loss of valuable biological and economic qualities as well as the reduction of biodiversity. The genetic monitoring allows for monitoring of the state of the genetic fund, assessment and dynamics of its dynamics in time and space, limits of tolerable genetic changes are determined.

It is well known that local breeds have a number of characteristics compared to modern ones: highly adaptive plasticity, resistance to infectious and parasitic diseases, and a good combination of economic and reproductive qualities. Many local breeds are characterized by great stamina, modesty and adaptability to unfavourable climatic conditions, good use of low-quality feed, healthy constitution, and relatively long life expectancy.

The development and application of contemporary gene-specific genetic markers in genotyping and genetic identification of breeds is essential for the effective assessment of genetic resources and the conservation of biodiversity in our country. Identifying of animals carrying different alleles of genes conferring important economic qualities will allow them to be effectively included in selection

programs, conserving the gene pool, and effectively multiplying threatened native species. The development and implementation of modern molecular-biological approaches will provide broad opportunities for assessing, using and preserving biodiversity.

The diverse ecological, climatic and economic conditions in Bulgaria, as well as the needs and interests of the human population, are prerequisites for the creation of a large number of local sheep breeds. Due to the fact that local breeds are relatively low in productivity, as well as the competitiveness of world markets, it inevitably requires improving the productive qualities of the populations. For this reason, the selection is aimed at importing high-yield animals, which affects local biodiversity. For example, a number of breeds such as Rilomanastyrska, Svishtovska, Panagyurska, Kotlenska and others are considered extinct. For many other breeds, breeding organizations have been set up, but the existence of many breeds is at the limit of the critical minimum. Threatened with extinction are the Stara Zagora sheep, the White Marsh sheep, Breznishka and others. The local breeds have a unique, unique genetic fund, which imposes its preservation. For this reason, the selection work for these breeds is mainly aimed at protecting the gene pool, characterizing the genetic profile of the breeds, and increasing their number until the limits of threat. Knowledge of the evolutionary biogeography of local sheep breeds, as well as information on genetic variation between and within each breed, is essential for the protection of the gene pool and selection practice.

The transition from a lifestyle based on hunting and gathering to agriculture and livestock is a major event in human history. Growing domesticated plants and animals, albeit from a geological point of view, has led to radical restructuring of human societies, changes in global biodiversity, significant changes in the earth's landscape and atmosphere and accelerated adaptation of human civilizations.

The Balkan Peninsula, located at the crossroads of Europe and Asia, is well known for its role as a corridor for the displacement of the first farmers and stock-breeders to enter Europe from Asia. The selection of a geographically diverse sample of archaeological sites and contemporary indigenous populations of domestic animals from Bulgaria (occupying a central position in the Balkans) will allow assessment of the assumptions about the penetration of the farming and stockbreeding communities migrating from the Middle East to Europe and / or the importance of the Balkans as a secondary center of homelessness and their role in the formation of the gene pool of European breeds of domestic animals.

Archaeological data based on demographic parameters show that sheep, as well as many other domestic animals, are domesticated in Central Anatolia (Zeder, 2008). It is assumed that domestication begins about 11,000 years ago. Studies based mainly on the mtDNA region (mtDNA, D-loop region) indicate the presence of five major haplogroups (AE) (Pedrosa., *et al*. 2005; Guo., *et al*. 2005 *et al*., 2006). Haplogroups is found to be of Asian origin, and haplogroups B has the highest incidence in Europe, while C, D, and E haplogroups are characteristic of the Middle East (Meadows., *et al*. 2007). These data show the presence of several homelessness centres. It is believed that the Asian mouflon (*Ovis orientalis*), also called *Ovis gmelinii* according to modern nomenclature, is the precursor of the domestic sheep (Hiendleder., *et al*. 1998).

Despite the varied phylogenetic and population-genetic research of different sheep breeds in Europe and other continents, Bulgarian local breeds have not been investigated so far in terms of their origin (phylogenetic relationships) and from the point of view of the genetic structure of their populations in our country. This fact determines the relevance of the scientific problem.

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