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in catecholamines. After parturition, an increase in fiber digestibility was recorded, probably due to an enhancement of fermentation processes carried by the increase in requirements due to lactation. Moreover, the increase in concentrates in the *postpartum* did not have negative effects on fiber digestibility, confirming that the quantity of starch was adequate (<1 g/meal/day) and the feed quality was high. Indeed, an adequate proportion between rapid fermentable carbohydrates and fiber is well known and associated with an adequate rate of degradation. In conclusion, it could be speculated that fiber digestion in mares is not only related to the quality of the delivered feeds but is also driven by physiological status. Further studies must be done to elucidate the mechanisms that lead to this phase.

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Evaluation of objective measurement of coat colors in horses

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During domestication, thanks also to human selection, horses have developed different coat colors. Horse coat color are classified from dark to light as black, dark bay, bay, chestnut, gray and white. This phenotypic trait is often used for breed differentiation indeed horse studbook normally allowed specific coat colors only. Traditionally, evaluation of coat color is performed by trained judges, but this method is sensitive to human error. Nowadays, new technologies such as colorimeter are available to characterize horses coat color. Thanks to those tools we can detect accurately all the shades and the differences between colors. The aim of this study is to evaluate coat color detected with an objective measurement, in three different Italian horse breeds, Bardigiano, Murgese and Tolfetano. In Bardigiano and Tolfetano, all the colors from black to bay are allowed in the studbook, instead for Murgese, only black or roan horses can be included. A total of 272 horses were analyzed with a colorimeter (Minolta Chromameter Reflectance CR-300). Four anatomic areas have been tested with this device; neck, shoulder, stifle to detect the coat color, and lip to identify skin color. Outcomes were in L^* a^* and b^* format, where L^* describes lightness, a^* describes colour saturation from red to green, and b^* describes colour saturation from yellow to blue. From those values, hue $[\arctan(b^*/a^*)]$ that describes real colour, and chroma $(a^{*2}+b^{*2})^{0.5}$ that describes saturation, were obtained. A total of 6 different coat colours were detected by colorimeter in Bardigiano horse (4 shades of bay and 2 of black), 2 for Tolfetano (bay and black), and 2 for Murgese (black and roan). A high correlation between neck and shoulder ($r=0.70$) and between stifle and shoulder ($r=0.66$) was found. Principal

component analysis was carried on to detect whether breeds differ to each other, based on colorimeter data. From the PCA, the differentiation between Murgese and the other two breeds was clearly measurable, whereas the split between Bardigiano and Tolfetano was not clear. Innovative tools to determine accurately the coat color in horses is therefore essential, especially in cases where there are specific constraints for the registration of animals to the studbook.

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Evolution of colostrum characteristics in murgese mares during the first 48 hours after foaling

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The conservation and reintroduction of autochthonous livestock breeds has been increasingly recommended as an effective biodiversity conservation strategy. Over the centuries, they have contributed greatly to the shaping of most traditional Mediterranean landscapes, such as Murgese, the oldest surviving Italian horse breed. More recently, horse breeding has also gained importance for colostrum, with its characteristic properties and the possibilities of its use on a pharmaceutical, but also on a veterinary level. The colostrum of mares is characterised by a unique chemical composition: high percentage of dry matter (30%), a large amount of proteins (10% on average) and immunoglobulin. The foal should ingest the colostrum within the first hours after birth, as the absorption of macromolecules and immunoglobulins is highest in the first hours of its life. Therefore, the administration of colostrum to the foal is essential for its survival in all cases where the mother is unable to do so. In this study, the physicochemical composition and antioxidant activity of colostrum from Murgese mares were analyzed. Colostrum samples from 25 lactating mares were collected in the first 48 h after foaling in six different farms specialized in breeding Murgese horses in the Apulia region, Italy. The collections took place between February/2021 and April/2021. Colostrum samples were collected by manual milking after cleaning the udder and stored in previously sterilized plastic bottles (6–12–24–48 h after birth). The immunoglobulin content was measured with a refractometer at each sampling. The results showed that the values of most chemical parameters in colostrum were highest 6 h after foaling, especially fat, protein and brix content. In contrast, an increase in pH and lactose content was observed 48 h after birth. The

colostrum in the first h was characterized by a high content of dry matter, protein and lysozyme and a high antioxidant activity. Its intake in the first 48 h of life guarantees the survival of the foal. In contrast, the foal's life is endangered if it does not absorb colostrum in the required quantity or quality, e.g. if it is abandoned by its mother or orphaned. For these reasons, the study was carried out in collaboration with the Territorial Biodiversity Office, which manages the Eastern Murge Biogenetic Nature Reserve, which has become a 'public colostrum bank' for national farms and all horse breeders.

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Whole genome sequencing data provide a landscape picture of genetic variability in sea cucumber species

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Holothuria or sea cucumber is a genus of marine invertebrates, belonging to the group Echinodermata, commonly called sea cucumbers. Holothuria species are detritivores, raking sand into their mouth with oral tentacles, extracting and digesting the bacteria, animal and vegetal particles, and voiding the sand through the anus. In this way they churn up significant areas of the seabed, playing a central role in the habitat these species live. Holothuria species have been seen as a promising candidate for aquaculture, as they are resistant to handling and adapt easily to captivity conditions. The interest in Holothuria for aquaculture began in Asia and reached the European market, making it a potentially valuable species for European aquaculture. The genus counts more than 160 species, many of which are uncharacterised at the genome level. However, very recently, few genome drafts became available, allowing to conduct genomic analyses on these species.

Here, we provide a first comparative genome analysis of two species of sea cucumber that are common along Italian shores, *Holothuria polii* (HP) and *Holothuria tubulosa* (HT) utilizing the reference genome of *Holothuria glaberrima* (HG) in the comparison, the only reference genome so far available. The reference genome is composed of 89,105 scaffolds, most of them (54,676)

with scaffolds below 10 kbp in size. Scaffolds over 10 kbp represent 1.067 Gb of the predicted 1.1 Gb. We produced whole genome sequencing datasets using Illumina paired-end read for a few HP and HT samples. About 300 million reads per sample were filtered and then mapped to the HG reference genome with standard options. Variant calling was performed considering all samples together. The genome coverage from the datasets of HP and HT was 56% and 58%, respectively. This relatively low coverage is probably linked to the drafted genome assembly for HG, which is highly fragmented. Variant calling produced 72,217,418 single nucleotide polymorphisms (SNPs), mostly on the longer scaffolds that will constitute the core of the analyses. This information has been used to estimate the genetic relationship among the three species and detect genomic regions of high genetic divergence that might be useful to define specific genome regions that characterize different Holothuria species.

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Use of biopromotor to improving depleted coastal and semi-closed marine areas

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The progressive pauperisation of the marine fauna is also testified by the results of fishing obtained along the Ionian coast that indicate a progressive decrease in the quantity and marine species fished. The local economy is heavily penalized by the low yield of fishing caused by problems related to environmental pollution and water heating. Use of bioactivator, mixtures of selected microorganisms, enzymes, plant extracts and mineral catalysts that, once released along the coastal areas, can activate and improve the quality of marine ecosystem.

For the trial in an area close to the mouth of the river Cavone (Pisticci, MT) 2 sites of equal surface area and comparable as by kilograms of fish caught as by number of species fished were identified (C – Control and T – Treated). On site T were weekly released 2 bioactivator (MICROPAN OXYLESS and MICROPAN AQUA PE). During the treatment, in each site, were performed a caught monthly (T0; T1; T2 and T3); on the boat the specimen fished was identified and numerated, individually weighed and delivered to the laboratory in refrigerated conditions (4 °C).