Genetic characterization of Collo Nudo Italiana and Millefiori Piemontese chicken breeds through high-density SNP genotyping

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This study aimed to assess the genetic variability of two indigenous breeds, Collo Nudo Italiana (CNI) and Millefiori Piemontese (MP), and evaluate their variability in the context of Italian local chicken biodiversity. Forty-eight individuals per breed, comprising both males and females, were genotyped through Affymetrix Axiom 600k Chicken Genotyping Array. Both CNI and MP exhibited high expected heterozygosity (0.672 ± 0.117 and 0.565 ± 0.119, respectively) and observed heterozygosity (0.654 ± 0.139 and 0.601 ± 0.119), and low coefficient of inbreeding (-0.004 ± 0.066 and 0.149 ± 0.405). Multidimensional scaling, phylogenetic tree, and admixture analyses allowed to contextualize CNI and MP with other chicken breeds, including 19 local breeds and 4 commercial hybrids. Results showed that CNI is close to the commercial hybrids, whereas MP is closely associated with Mericanel della Brianza, Bianca di Saluzzo, and Bionda Piemontese local breeds. The present study characterized CNI and MP breeds using high-density chip, also in the framework of Italian chicken biodiversity, and findings are useful for conservation purposes. *This work was funded by MASAF (project "TuBAvI-2", PSRN 2014-2022, Sottomisura 10.2).*