

Microsatellite characterisation of Croatian autochthonous pig breeds

Marija ĐIKIĆ¹, Nikica ŠPREM¹, Krešimir SALAJPAL¹, Julija JURIC², Domagoj ĐIKIĆ³,
Toni SAFNER¹, Ino ČURIK¹, Vlatka ČUBRIĆ ČURIK¹

¹University of Zagreb, Faculty of Agriculture, Svetošimunska cesta 25, 10000 Zagreb, Croatia
(e-mail: vcubric@agr.hr)

²Genos, Planinska 1, 10000 Zagreb, Croatia

³University of Zagreb, Faculty of Science, Horvatovac 102a, 10000 Zagreb, Croatia

Abstract

Genetic structure, relationship and diversity were analyzed in Croatian autochthonous breeds, Turopolje pig (CATP, 48 samples) and Black Slavonian pig (CABS, 28 samples), using 14 microsatellite loci. As traditionally those breeds are kept in the outdoor system, we also analyzed potential admixture with local wild pigs, Lonjsko polje National Park area (WBLP, 20 samples) and Djakovo area (WBDJ, 20 samples), as well as a wild pig population from Island Cres (WBCI, 20 samples) representing an out-group. A posterior Bayesian approach implemented in the program STRUCTURE indicating existence of two autochthonous (CATP & CABS) and two wild pig populations [WBNP (WBLP & WBDJ) & WBCI] with low level of admixture between domestic and wild populations. The lowest differentiation was estimated between WBNP and CABS ($F_{ST}=0.154$) as well as between WBNP and WBCI ($F_{ST}=0.159$). In contrast, CATP was rather differentiated from CABS ($F_{ST}=0.240$), from WBNP ($F_{ST}=0.292$) and from WBCI ($F_{ST}=0.429$). High allele richness [total number of alleles (A_T)] and diversity [expected heterozygosity (He)] was observed in WBNP [$A_T=7.1$, $He=0.67$] and CABS [$A_T=6.4$, $He=0.72$] populations while much lower values were observed in CATP [$A_T=5.6$, $He=0.49$] and WBCI [$A_T=3.5$, $He=0.49$]. In conclusion, the results obtained indicated urgent need for the effective conservation program for CATP population.

Key words: microsatellite, autochthonous pig, genetic structure, diversity

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Genetska karakterizacija hrvatskih autohtonih pasmina svinja

Marija ĐIKIĆ¹, Nikica ŠPREM¹, Krešimir SALAJPAL¹, Julija JURIC², Domagoj ĐIKIĆ³,
Toni SAFNER¹, Ino ČURIK¹, Vlatka ČUBRIĆ ČURIK¹

¹Sveučilište u Zagrebu, Agronomski Fakultet, Svetošimunska cesta 25, 10000 Zagreb, Hrvatska
(e-mail: vcubric@agr.hr)

²Genos d.o.o., Planinska 1, 10000 Zagreb, Hrvatska

³Sveučilište u Zagrebu, Prirodoslovno - matematički fakultet, Horvatovac 102a, 10000 Zagreb, Hrvatska

Sažetak

Na temelju informacije 14 mikrosatelitnih gen lokusa analizirali smo genetsku strukturu, srodnost i bioraznolikost hrvatskih autohtonih pasmina svinja, turopoljske svinje i (HATS, 48 jedinki) i crne slavonske svinje (HACS, 28 jedinki). Kako se navedene pasmine tradicionalno drže u otvorenom sistemu, analizirali smo i mogućnost potencijalnog križanja sa lokalnim populacijama divljih svinja, populacijom iz okolice Lonjskog polja (DSLJ, 20 jedinki) i populacijom iz okolice Đakova (DSĐK, 20 jedinki), kao i divljim svinjama sa otoka Cresa (DSCS, 20 jedinki) kao poredbenom populacijom. A posteriori Bayes pristup ugrađen u program STRUCTURE ukazao je na postojanje dvije populacije autohtonih pasmina (HATS i HACS) i dvije populacije divljih svinja [DSSP (DSLJ & DSĐK) i DSCS], ali i malu razinu izmiješanosti. Najmanja razina diferencijacije dobivena je između DSSP i HACS ($F_{ST}=0.154$) te između DSSP i DSCS ($F_{ST}=0.159$). Suprotno, HATS je bila jako diferencirana od HACS ($F_{ST}=0.240$), od DSSP ($F_{ST}=0.292$) i od DSCS ($F_{ST}=0.429$). Bogatstvo alela [ukupan broj alela (A_T)] i bioraznolikost [očekivana heterozigotnost (He)] bila je zadovoljavajuća kod DSSP [$A_T=7.1$, He=0.67] i HACS [$A_T=6.4$, He=0.72], dok su mnogo niže vrijednosti dobivene kod HATS [$A_T=5.6$, He=0.49] i DSCS [$A_T=3.5$, He=0.49]. Dobiveni rezultati ukazuju na nužnost hitne uspostave efikasnog programa zaštite turopoljske svinje (HATS).

Ključne riječi: mikrosateliti, autohtona svinja, genetička struktura, raznolikost

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