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Genetic divergence among the hammerhead sharks species of the Brazilian coast

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Sharks are important commercial resource, in particular because of their fins. However, due to intense and unsustainable fishing activities, nearly 93% of shark species are currently listed by the IUCN Red List. Hammerhead sharks (family Sphyrnidae) are commonly captured and all of species are included in IUCN Red List. Hammerhead sharks get their name because its head is laterally expanded and dorsal–ventrally compressed. Although the morphology of their heads are diagnostic for identifying different species, the common practice of removing the head and also their fins prior landing, compromises a reliable morphological identification of specimens. Recently, the mitochondrial cytochrome oxidase I (COI) gene has become significant role on facilitating the process to identifying species. Associated with the characteristics of this gene, the Multiplex-PCR allows simultaneous, rapid and inexpensive identification of specimens. However, it is essential the development of the species-specific primers. Thus, data of intra and interspecific genetic divergence are important to evaluate the feasibility of developing these molecular markers, and this was the aim of this study, for the most common hammerhead shark species in Brazilian waters. The species analyzed were: *Sphyrna tudes* (n = 3), *S. mokarran* (n = 5), *S. lewini* (n = 4), *S. zygaena* (n = 7), *S. tiburo* (n = 1). We also utilized seven sequences of *S. tiburo* from BOLD (Barcode of Life Database). The sequences were aligned using the BioEdit© and the genetic divergence were compared by Mega©. The genetic divergence among the specimens of *S. tiburo* was 6 ‰ (6 base pairs), among the specimen of *S. mokarran* was 1 ‰ (1 base pair) and for other species the sequences were completely equal among their specimens. The interspecific genetic divergence was range from 7.8% to 12.5%. Thus, the low values of intraspecific genetic divergence and high values of interspecific divergence suggest a great viability to design primers to discriminate species of hammerhead sharks by Multiplex-PCR. These and other species-specific primers will assist the evaluation of shark fishing, allowing the species-specific characterization of commercial landings, and fins that are constantly arrested by IBAMA. All of this will provide data for monitoring fisheries, fin trade and shark conservation.

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