

ABSTRACT

This study investigates the genetic-based identification and nutritional composition of 5 important marine fishes: *Trichiurus lepturus*, *Sillago sihama*, *Acanthopagrus arabicus*, *Otolithes cuvieri*, and *Nemipterus japonicus* sampled from supermarkets of Lahore, Pakistan. The fish species identified by using mitochondrial 16S rRNA gene (350 bp). NCBI-BLAST confirmed the 100% identification of the sampled fishes using genetic sequences from the NCBI GenBank database. The standard protocol of the Association of Official Agricultural Chemists (AOAC and ICPOES) was used to determine the proximate composition and mineral content. The study's findings demonstrated that every sample had a significant variation ($p < 0.05$). *Acanthopagrus arabicus* had highest protein content (18.4%), while *Nemipterus japonicus* had the lowest (14.9%). The crude fat was found highest in *Acanthopagrus arabicus* whereas lowest in *Nemipterus japonicus*. The range of the moisture content was 74.8 to 76.3%. The average ash content of each fish ranges from 1.6% to 2.0%. *Otolithes cuvieri* had the lowest calcium level (1621.17 mg/kg), whereas *Trichiurus lepturus* had the highest (1793.09 mg/kg). The magnesium content ranged between $1722.93 \pm 122.95a$ to $2087.31 \pm 87.24a$. All fish species had comparatively lower levels of zinc, potassium, sodium and iron and all of the results were within the recommended ranges defined by the WHO and FAO. This is the first report on identification from Pakistan in the Arabian Sea based on morphology and DNA analysis. For aspiring biologists, DNA-based identification methods provide an important analytical supplement or perhaps a potential replacement for inventory. The marine fishes can be excellent source of an important nutrients and may provide more health advantages to people.

Keywords: Marine Fishes, 16S rRNA, proximate analysis, Minerals