

Summary

The current study was carried out during the period from December 2015 and June 2016 to assess the chemical composition, fatty and amino acids and the total bacterial count of the muscular tissue from the common carp *Cyprinus carpio* L. in Basrah city which were caught from Shatt Al-Arab river at Abul-Khasib, obtained from earthen ponds at the University of Basrah, fish cages in Shatt Al-Arab river at Al-Harthah district and those imported from Iran Republic which were available in the domestic markets of Basrah city.

The results of the study were statistically analyzed using CRD design applying SPSS statistical package ver. 17 on 50 fish from each source with 3 replicates per sample and the studied factors were tested using RLSD test at 0.05 probability level.

The results of the statistical analysis indicated no significant differences ($p>0.05$) in moisture content between Shatt Al-Arab samples, imported samples, iced pond fish and iced cage fish. No significant differences ($p>0.05$) were detected also between fish from ponds and cages. Significant differences ($p<0.05$) were detected between fresh fish from ponds and cages with fresh and iced fish from Shatt Al-Arab or imported fish. The highest moisture content of fresh fish was 78.2% in Shatt Al-Arab samples while the lowest 70.8% was in fresh cage fish. The highest moisture content in iced fish 79.4% was in imported samples while the lowest 74.1% was in cage fish. As for ash content, the statistical analysis revealed significant differences ($p<0.05$) between imported fish and other fish samples. Significant differences ($p<0.05$) were observed also between fresh pond fish and other samples.

However, no more significant differences ($p>0.05$) were detected between other fish samples. The highest ash content in fresh fish 2.29%

was in pond fish and the lowest 0.98% in imported fish. Similarly, the highest ash content in iced samples 1.45% was in pond fish and the lowest 0.87% in imported samples. The statistical analysis of fat contents demonstrated significant differences ($p<0.05$) between Shatt Al-Arab fresh and iced samples and other samples. Fat content in pond fish was in line with those in iced cage and iced imported fish but significantly ($p<0.05$) differ from those in fresh pond and imported fish while no such differences were shown between pond and imported fish. The highest fat content in fresh fish 11.9% was in imported fish and the lowest 3.43% in Shatt Al-Arab fish. Similarly, the highest fat content of iced fish 9.99% was in imported fish and the lowest 3.17% in Shatt Al-Arab fish. The statistical analysis showed that protein contents in fresh fish from Shatt Al-Arab, ponds and cages were significantly ($p<0.05$) higher than those in imported fish while protein contents in fresh and iced imported fish were significantly ($p<0.05$) lower than it in other fish. The highest protein content in fresh fish 18.71% was in pond fish and the lowest 10.05% in imported fish. Similarly, the highest protein content in iced fish 16.96% was in pond fish and the lowest 9.98% in imported fish. The statistical analysis showed that the caloric values of fresh and iced fish from Shatt Al-Arab were significantly ($p<0.05$) lower than other fish except for iced pond and imported fish. Additionally, no significant differences ($p>0.05$) were observed in caloric values between pond, iced cage and imported fish while pond and Shatt Al-Arab fishes only showed significant differences ($p<0.05$) in comparison with other samples. The highest caloric value for fresh fish 165.62 Kcal/100 g in cage fish and the lowest 98.5 Kcal/100 g in Shatt Al-Arab fish. On the other hand, the highest caloric value for iced fish 148.4 Kcal/100 g was in cage fish and the lowest 93.9 Kcal/100 g in Shatt Al-Arab fish.

The fatty acids were assessed in the laboratories of The College of Agriculture, University of Basrah by using GC-MS QP210 Ultra, SHIMADZU, JAPAN equipped with capillary column DB-MS 5 with static phase (5% phenyl, 95% methyl polysiloxane) and ultra-high purity Helium 99.9%. The fatty acid analysis for the muscular tissue of fish indicated high levels of oleic, palmitic, stearic, docosahexaenoic acid in comparison with lower levels of myristoleic, eicosadienoic, dihomogamma-linolenic and pentadecyclic acids. The statistical analysis revealed no significant differences between both fresh and iced samples from the different fish sources. However, significant differences ($p < 0.05$) were detected between imported fish and fresh and iced fish from ponds and cages. Additionally, no significant differences ($p > 0.05$) were observed between fresh and iced imported samples with both fresh and iced pond fish while fresh and iced cage fish differed significantly ($p < 0.05$) from fresh pond samples.

Amino acids were assessed by using HPLC system with ion exchange and Ninhydrin post column derivation in Shimadzu Spd – 6 Av uv – Visible detector. The analysis of amino acids in fish muscular tissue demonstrated high levels of Aspartic, Serine, Glutamic, Alanine and Glycine and low levels of Cystine, Tryptophan, Isoleucine, Methionine, Histidine, Threonine and Tyrosine. The statistical analysis showed no significant differences between fresh and iced Shatt Al-Arab samples with fresh and iced imported fish. No significant differences ($p > 0.05$) were observed also between fresh and iced pond fish with fresh and iced cage fish. On the other hand, significant differences ($p < 0.05$) were found between fresh and iced Shatt Al-Arab fish with fresh and iced imported samples. Additionally, another significant differences were detected between fresh and iced pond fish with fresh and cage fish.

As for the total bacterial count, the statistical analysis revealed significant differences ($p < 0.05$) between all fresh and iced fish samples. The highest level in fresh fish 7.6×10^3 cfu/g was observed in Shatt Al-Arab fish while the lowest level 2.0×10^3 cfu/g in imported fish. In comparison, the highest level in iced fish 7.44×10^7 cfu/g was also in Shatt Al-Arab fish but the lowest level 5.72×10^7 cfu/g in cage fish.

Comparison of nutritional value of the common carp *Cyprinus carpio* L. from different sources

A thesis

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