

ORIGINAL ARTICLE

A small collection of cyprinid fishes of fountain and natural streams of Halabja city, north east of Iraq

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ABSTRACT

A small collection of freshwater fishes from different water bodies of Halabja province, North east of Iraq, revealed the presence of twelve species belonging to the family Cyprinidae viz *Acanthobra mamarmid* Heckel, 1843; *Alburnus sellal* Heckel, 1843; *Alburnus scaeruleus* Heckel, 1843; *Alburnus mossulensis* Heckel, 1843; *Barbuslacerta* Heckel, 1843; *Capoetatrutta* (Heckel, 1843); *Carasobarbus luteus* (Heckel, 1843); *Carassius auratus* (Linnaeus, 1758); *Chondrostoma regium* (Heckel, 1843); *Cyprinion kais* Heckel, 1843; *Cyprinion macrostomum* Heckel, 1843, and *Squalius cephalus* (Linnaeus, 1758). The most important characters of these fishes were reviewed, some features were compared with other literatures, and reasons for differences in morphometric characters were discussed.

Key words: Cyprinidae, freshwater, fish, Halabja, Iraq.

Received 04.01.2019

Revised 18.02.2019

Accepted 05.03.2019

How to cite this article:

A A Mustafa, R A. Abd Alsaheb, J Kamil Abdullah. Production L-lactic acid from different starch sources by optimization media Composition using fermenter 2Liter Scale. Adv. Biores., Vol 10 [2] March 2019:27-32.

INTRODUCTION

The family Cyprinidae considers as the largest family of freshwater fishes, it includes about 3,006 species, various species of this family are important as food fish, aquarium fish and in researches [1].

This family includes the most Iraqi fresh water fishes [2], arranged under more than genus. The genus *Acantho brama* comprises of 8 species endemic to Southwest Asia [2]; the genus *Alburnus* Rafinesque, 1820 comprises of 43 species distributed in Europe and the northern part of Western Asian waters [3]; *Barbus* Cuvier and Cloquet, 1816 is another genus belonging to the family Cyprididae , it includes a wide variety of species that are the most popular food fishes in Iraq [2]; the genus *Capoeta* Valenciennes in Cuvier and Valenciennes, 1842 has a wide distribution in Southwest Asia and contains about 10 species [2]; the genus *Carassius* Nilsson, 1832 comprise 2-3 species found in the Far East, northern Asia and Europe , *C. auratus* belonging to this genus, it is common in Iraq [2] .The another genus of Cyprididae is *Caraso barb*us Karaman, 1971, this genus was erected to place *Barbus luteus* [2], that occurs in all major river systems of South West Asia and North West Africa , Mesopotamia, southern Iran, the western and south-western Arabian Peninsula and in northern Morocco [4]. The genus *Chondro stoma* Agassiz, 1832 composed of small to medium-sized cyprinid fishes in 26 species distributed in Asia, Europe and in the Middle East [5], of them only *C. regium* found in the Tigris-Euphrates basins in Iraq [2]. Only two species belonging to the genus *Squalius* Bonaparte, 1837 found in Iraq , that were reported referred to the genus *Leuciscus* previously, but they are now in the genus *Squalius* [2]. *Squalius cephalus* may have originated from Mesopotamia [6].

The aim of this study is to determine species of the family Cyprinidae which collected from rivers, natural streams and fountains in Halabja province, north east of Iraq.

MATERIAL AND METHODS

Fish samples were collected from rivers, natural streams and fountains of Halabja province (Sayed Sadik, Sarawi Subhan Agha, Haji Racky, Chame Quira, Zalam river and Kanipanka), North east of Iraq. Twelve

fish species were found belonging to the family Cyprinidae, they were identified to species according to Coad [2] and Beckman [7].

RESULTS AND DISCUSSION

Twelve freshwater fish species belonging to the family Cyprinidae, Order Cypriniformes, were collected from different water bodies of Halabja province, north east of Iraq, they are:

'Class: Actinopterygii

Order: Cypriniformes

Family: Cyprinidae

Acanthobra mamarmid Heckel, 1843

Alburnus sellal Heckel, 1843

Alburnus caeruleus Heckel, 1843

Alburnus mossulensis Heckel, 1843

Barbus lacerta Heckel, 1843

Capoeta trutta (Heckel, 1843)

Carasobarbus luteus (Heckel, 1843)

Carassius auratus (Linnaeus, 1758)

Chondrostoma maregium (Heckel, 1843)

Cyprinion kais Heckel, 1843'

Cyprinion macrostomum Heckel, 1843

Squalius cephalus (Linnaeus, 1758)

***Acanthobra mamarmid* Heckel, 1843**

Body small, deep, compressed. Small dark patches found on the back and sides of the body and more intense on the head, neither Coad [2], nor Beckman [7] pointed this feature.

Standard length 3 times of body height. Mouth slightly oblique, lower jaw slightly behind the upper. No teeth in mouth. No barbels. Lateral line slightly bent downward, Count of scales in the lateral line are 66 (53-72 in Coad [2]; 65-70 in Beckman [7]). The pelvic fin branched rays are 8. The anal fin is long, 3 unbranched, 16 branched rays. Number of anal branched rays is similar to that of Beckman (7), and differs from that of Coad [2]. Pelvic axillary scale present.

Distribution: This fish is common and widely distributed in the Tigris and Euphrates River Systems (8). It is one of the 8 species of the genus *Acanthobrama* which endemic to Southwest Asia, it was recorded from the marshes of southern Iraq, Little and Great Zabs, and in North of Iraq (2).

In the present study only 3 species belonging to the genus *Alburnus* were found in Halabjaviz, *Alburnus caeruleus* Heckel, 1843, *A. mossulensis* Heckel, 1843 and *A. sellal* Heckel, 1843.

***Alburnus caeruleus* Heckel, 1843 (Fig1)**

Alburnoidesrecepti is treated as a synonym of *A. caeruleus* [9]. Body relatively deep, pigmented. Standard length 3.4 times of body height (little more than that of Beckman [7]). Head deep. Mouth upper. Caudal peduncle short. Count of scales in the lateral line is 49. Anal rays 16 (less than those of Beckman, [7]). Dorsal fin 3 unbranched, 9 branched rays. Anal branched rays 17. Caudal peduncle short and deep.

Distribution: It found in the Euphrates and Tigris drainages in southern Turkey, Iran and Iraq [10]. In Iraq, it found in the Tigris-Euphrates River systems, southern marshes, streams, dams and lakes [2; 7].



Figure (1): *Alburnus caeruleus* Heckel, 1843, Haji Racky stream.

***Alburnus sellal* (Heckel, 1843)**

Body smaller and more depth than that of *A. caeruleus*. The mouth is small, upper jaw little slightly behind the lower, no barbels. The eye is large. There is a dark stripe separating the upper third of the body from the lower part. Dorsal fin composed of unbranched, 8 branched rays. Anal fin composed of 3 unbranched,

12 branched rays. Lateral line scales more than 80 (they are 73-80 in Beckman, (7)). There is a dark stripe separating the upper third of the body from the lower part.

Kruppet *al.* (11) said that Heckelin 1843 described *A. sellal* from the Qwaiq River in Aleppo, Syria and *A. mossulensis* from the Tigris River in Mosul, Iraq; they retained *A. mossulensis* as a valid species and they pointed out that it seems likely that *A. mossulensis* is a synonym of *A. sellal*. Coad (2) mentioned that *A. mossulensis* may be nothing more than a subspecies or probably a synonym of *A. sellal*. Later, the molecular data of Mohammadian-Kalat *et al.* (12) proved that there is no difference between *A. mossulensis* and *A. sellal*, and they gave precedence to *A. sellal* over *A. mossulensis*. However, we found in this study some differences between *A. mossulensis* and *A. sellal* in coloration and that *A. mossulensis* is more slender and elongate than *A. sellal*.

***Alburnus mossulensis* Heckel, 1843**

Body slender and elongate. Standard length 4.8 times of body height, there is a lead-colored spot on the back of the body and stripe on the sides above the lateral line. Mouth terminal. No barbels. Dorsal fin composed of 3 unbranched, 8 branched rays. Anal fin composed of 3 unbranched, 12 branched rays. . The lateral line scales count is 86 (they are 73-78 in Beckman (7); 60-89 in Coad (2)).

Distribution: This fish found in the Tigris-Euphrates basin and in Iran. It is found widely in Iraq, in the Shatt al Arab River, the southern marshes, Tigris, Euphrates and Diyala rivers, Little and Great Zabs, streams and lakes (2).

***Barbus lacerta* Heckel, 1843** (Fig. 2A&B)

Synonyms: Coad (2) referred to *Barbus scincus* Heckel, 1843 as a synonym of *B. lacerta* and Khaefiet *al.* (13) treated *Barbu sercisianus* as a synonym of *B. lacerta*.

Body with numerous spots on the back, which appear as a stripe in young fish, this character makes this fish easy to distinguish in our collection. The mouth with thick tuberculate lips, the median pad of the lower lip distinctive as triangular gular region. Khaefi *et al.* (13) in their study on *B. lacerta* group, mentioned that *B. lacerta* is distinguished from all other species of the group by having a triangular gular region (while it is rectangular in other species of the *B. lacerta* group).

Distribution: This fish is widespread, found in smaller rivers and streams of the Tigris-Euphrates basin (2); it is also found in the upper Karkheh in Iran, in some Lakes in Eastern Turkey, and in Chami Rian River, a tributary to Great Zab in Erbil province in Iraq (13).

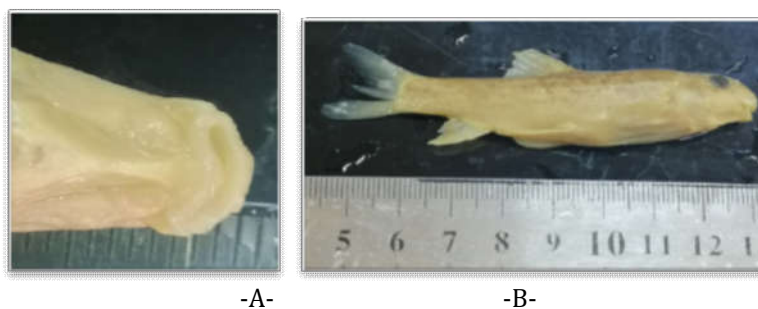


Figure (2): *Barbus lacerta* Heckel, 1843 from Zalam river.
A- Whole body B- Ventral side of head showing the triangular gular region.

***Capoeta trutta* (Heckel, 1843)**

Coad (2) considered the genus *Varico rhinus* Rüppell, 1836 as a synonym of the genus *Capoeta* Valenciennes in Cuvier and Valenciennes, 1842. *C. trutta* was described as *Scaphiodon trutta* by Heckel in 1843 [14]. *Capoeta trutta* (reported as *Varicorhinus trutta* in some literatures) characterized by having numerous black spots spread irregularly in the dorsal half of the body, this agrees with findings of Zareian *et al.* [15]. The standard length is 3 times of body height. Dorsal fin composed of 3 unbranched, 9 branched rays, the last unbranched dorsal fin is very strong. Anal fin composed of 2 unbranched, 5 branched rays. The scales along the lateral line count 77.

Distribution: This fish is native to the Middle East: Iran, Turkey, Iraq, and Syria [16], it found commonly in the Tigris river basin (17).

In some previous literatures, there is different in species number belong to the genus *Capoeta* in Iraq, as Coad (2) mentioned the four species: *Capoeta aculeata*, *C. barroisi*; *C. damascina* and *C. trutta*, while, Al-Faisal [18] considered that only three species of the genus *Capoeta* are certain to be present in Iraqi freshwater, *C. aculeata* was not one of them.

***Carasobarbus luteus* (Heckel, 1843)**

Barbusparieschanica is a synonym of *C. luteus* [4]. The mouth is small, two pairs of barbels at mouth corner. Dorsal fin composed of 3 unbranched, 11 branched rays, the last unbranched ray is weak and not serrate. The lateral line scales count is 28. Anal fin composed of 3 unbranched, 6 branched rays. There are dark strips on the back and a dark spot at base of caudal.

Distribution: This fish is widespread and abundant in all over the Tigris-Euphrates drainage system and in the rivers of southwestern Iran [4]. Borkenhagen *et al.* [19] said that the population of *C. luteus* of Tigris-Euphrates system and that of Iran, belong to the same species. In Iraq, it is known also in the Zubayr Inlet, the Shatt al Arab River and its tributaries in Basrah province, southern marshes, little and Great Zabs, Diyala, streams, lakes and in reservoirs [2].

***Carassius auratus* (Linnaeus, 1758) (Fig. 3A&B)**

This goldfish possesses a long dorsal fin composed of 3 unbranched rays, the last one as spine, and 18 branched rays. Anal fin composed of 3 unbranched rays the last one serrated and developed as spine, the branched rays are 5. Lateral line scales 31.

Distribution: The native distribution of this fish is in northern and Eastern Asia, including China, reaching Caspian Sea. It has been widely introduced to warm waters worldwide; it is a successful exotic fish, it has been widely introduced to Iraq, found in Baghdad and in the southern marshes (2).

Lahonyet *al.* (20) did not list *Carassius auratus* within their systematic lists of fauna and flora of Hawraman Mountain, Halabja Province, as they recorded only the five freshwater fish species (*Barbatula panthera* ; *Chondrostoma maregium*; *Capoeta* (reported as *Varicorhinus*) *barroisi*; *Caraso barusluteus* (reported as *Barbusluteus*) and *Acanthobra mamarmid*), all these species belonging to the family Cyprinidae. *C. auratus* appeared in large numbers for the first time in Hamawgan fountain, Halabja after the series of the earthquakes in 2018. To the best of our knowledge, this is the first record for this fish from Halabja.



Fig (3):*Carassius auratus*(Linnaeus, 1758) from Hamawgan fountain
A- Hamawgan fountain, Halabja **B-**Whole body.

***Chondrostoma regium* (Heckel, 1843) (Fig. 4)**

The mouth is inferior, transverse, lower jaw behind the upper. The snout is rounded. Lips thick, the lower lip more thickly. Standard length 4 times of body depth. Dorsal fin composed of 3 unbranched, 9 branched rays. Anal fin composed of 3 unbranched, 10 branched rays. Count of scales in the lateral line is 65.

Distribution: this fish found in Orontes, Queiq, Euphrates and the Khabour Rivers, Tigris, Little and Great Zabs, Diyala River, streams, lakes and reservoirs [2; 7].



Fig (4): *Chondrostoma regium* (Heckel, 1843) from Haji Racky, Halabja road.
A- Whole body.
B- Ventral side of head showing the mouth.

Although Uçkun and Gökçe [21] said that there are 3 species of *Cyprinion* inhabiting the Tigris–Euphrates Basin, only two species of this genus were found in Halabja in this study viz *C. kais* and *C. macrostomum*.

***Cyprinion kais* (Heckel, 1843)**

CyprinionCypris Heckel, 1843 is a synonym(2; 22). Body Standard length 3 times of body height. Mouth small, lower jaw slightly behind the upper. One pair of small barbels at the mouth corner. Scales in lateral line count 41. The dorsal fin is long, compose of 4 unbranched, 13 branched rays. The anal fin composed of 8 branched rays. Pelvic axillary scale present.

Distribution: Aleppo in Syria, Tigris-Euphrates basin, southwestern Iran and in marshes, large and smaller rivers, Little Zab, ponds and in reservoirs in Iraq (2; 7).

***Cyprinion macrostomum* Heckel, 1843**

Synonym: *Cyprinion neglectus* Heckel, 1846 (23).

Standard length 2.8 times of body height. Scales in lateral line count 41. The mouth is inferior, wide and straight, has a horny covering, no lateral lobes in the lower jaw. The dorsal fin is moderately notched; composed of 4 unbranched, 13 branched rays.

Distribution: in Iraq, This fish from the Tigris, Euphrates, and Khabour Rivers, Great and Little Zabs, Diyala and smaller rivers, streams, lakes and reservoirs (2; 7).

Coad (2) determined the most important characteristics to distinguish between *C. kais* and *C. macrostomum*, he said that the mouth shape is one of those characters, it is narrower and more arched and the lateral lobes present in *C. kais*, while the mouth is wider and lacks the lateral lobes in *C. macrostomum*(Fig. 5A&B); the other character is the dorsal fin origin, it rises over that of the pelvic fin in *C. kais*, while its origin is in front of that of the pelvic fins in *C. macrostomum*; the last character is the edge of the dorsal fin it is more notched in *C. kais* than in *C. macrostomum*.



-A-

-B-

Figure (5): ventral side of head.

A-*Cyprinion kais* Heckel, 1843 from Haji Racky, Halabja road.

B- *Cyprinion macrostomum* Heckel, 1843 from Haji Racky, Halabja road.

***Squalius cephalus*(Linnaeus, 1758)(Fig. 6)**

Leuciscuscephalus orientalis Nordmann, 1840 is a synonym of *Leuciscus cephalus* (Linnaeus, 1758) according to Coad (22) and WoRMS (24).

Body little compressed, a small brown patch on the body concentrated on upper back. Scales large, their outlines pigmented, their number in the lateral line count 37 (40-41 in Beckman (7); 38-48 in Coad, (2)). Mouth terminal or subterminal. No barbels. Dorsal fin composed of 3 unbranched, 8 branched rays. Anal fin composed of 3 unbranched, 7 branched rays.

Distribution: In Iraq, Turkey and Iran, in Tigris and its drainages, Euphrates, some smaller rivers and some reservoirs (2; 7).



Figure (6): *Squalius cephalus* (Linnaeus, 1758) from Zalam River, Sayed Sadik.

The differences in morphometric characters between our own fishes in the present study and those of the previous literary data may be attributed to differences in habitat conditions, such as geographical isolation and environmental changes, this consistent with that stated by Colihueque *et al.* (25) in that fishes are effected largely to environmentally-induced morphological variations. Coad (2) attributed the variation in some fish species, such as in variation of the scale counts in *Alburnus mossulensis* to the effect of local environmental conditions, also Borkenhagen and Krupp (4) pointed that fragmentation of the distribution area of *C. luteus* resulted several isolated populations.

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