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Isolation and identification of *Edwardsiella tarda* from the middle intestine of the (Asian catfish) *Silurus triostegus* (Heckel, 1843)

A.J. Mansoer[1], S.Sh. Mahdi[2*] and Sh.J. Raesan[1]
College Education for Pure Sciences [1], College of Sciences [2], University of Basrah, Basrah-Iraq

[*]e-mail: Saadshaker2003@yahoo.com

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Abstract - The present study represent a first record of the bacterium *Edwardsiella tarda*, Enterobacteriacea from the middle intestine of the Asian catfish, *Silurus triostegus* on native studies in Iraq. Twenty five fish were collected during December 2006 from the Garmat Ali River, Basrah City, using seine nets. Sampled fish ranged between 350-750 g and 250-650 mm. Ten isolates of were bacteria *Edwardsiella tarda* it is belong to.

Keywords: First record, *Edwardsiella tarda*, Asian catfish, Edwardsiellosis.

Introduction

Catfishes are one of the widely spread fishes in the world, with 2,000 known species (Nelson, 1976). Catfish are infected by edwardsiellosis, a disease caused by *Edwaredsilla* sp., which includes (*E. tarad, E. ictalur and E. hoshinae*) a member of the family Enterobacteriaceae, and are the causative agent of septicemia in a variety of fish species (Ewing *et al*., 1965).

The bacteria are transmitted through the blood to the various parts of the fish, causing a disease known as edwardsiellosis. These bacteria may also be transmitted to other conspecifics or predators (Castro *et al*., 2006), which may cause diversely affect the environment and the economy of dependent human populations.

Infected fish processed for human consumption may cause digestive problems, meningitis, cholecystitis, endocarditis, liver abscess and osteomyelitis (Janda *et al*., 1991; Srinivas *et al.,* 2001).

This study has the objective to isolate and identify the most common bacteria from the middle intestine of the (Asian catfish) *Silurus triostegus* in order to estimate infection rates and the consequence of infections for human health.

Materials and Methods

Sampling:

A total of 25 (Asian catfish) *Silurus triostegus* were collected randomly from the Garmat Ali River at Basrah City using seine nets. Sampling was conducted during December 2006.

Isolation and identification:

Bacterial samples were collected from the middle intestine of fresh Asian catfish using a swab, which was subsequently smeared on blood and McConkey agar on a glass plate. The plates were incubated at 37 °C, for 24-48 h, and examined for primary cultures. Examination was done by visual inspection of the morphology of the bacterial colonies and were subculture don nutrient agar slants. Identification of the purified bacterial cultures was conducted as described by WHO (1987).

Results and Discussion

The results of the isolation and identification of the 10 isolates from *E. tarda,* a member of the family Enterobacteriaceae from the middle intestine of the Asian catfish according to the conventional methods, morphological and biochemical characterizations (Holt *et al.,* 1994).

The *E. tarda* bacterium was characterized by a short, straight rod, was motile, gram negative. It produced H_2S, was nitrate reductase, did not produce acetone, urease and oxidase, and did not hydrolyse gelatin (Table 1).

Table 1. Biochemical profile of *Edwardsiella tarda*.

No	TEST	Bacterial isolates									
		1	5	8	12	13	14	16	20	22	25
1	Gram stain	-	-	-	-	-	-	-	-	-	-
2	Motility	+	+	+	+	+	+	+	+	+	+
3	Indole production	+	+	+	+	+	+	+	+	+	+
4	Methyl Red	+	+	+	+	+	+	+	+	+	+
5	Voges-Proskauker	-	-	-	-	-	-	-	-	-	-
6	Citrate, Simmons	-	-	-	-	-	-	-	-	-	-
7	Catalase	+	+	+	+	+	+	+	+	+	+
8	Urease	-	-	-	-	-	-	-	-	-	-
9	H2S production	+	+	+	+	+	+	+	+	+	+
10	Cytochrome oxidase	-	-	-	-	-	-	-	-	-	-
11	Phenylalanine diamminase	-	-	-	-	-	-	-	-	-	-
12	Lysine descarboxylase	+	+	+	+	+	+	+	+	+	+
13	Ornithin descarboxylase	+	+	+	+	+	+	+	+	+	+
14	Droxyribonuclease	-	-	-	-	-	-	-	-	-	-
15	Arginine Dihydrolase	-	-	-	-	-	-	-	-	-	-
16	Nitrate Reductase	+	+	+	+	+	+	+	+	+	+
17	Malonate Utilization	-	-	-	-	-	-	-	-	-	-
18	Gelatin hydrolysis	-	-	-	-	-	-	-	-	-	-
19	Glucose	+	+	+	+	+	+	+	+	+	+
20	Lactose	-	-	-	-	-	-	-	-	-	-
21	Mannitol	-	-	-	-	-	-	-	-	-	-
22	Sucrose	-	-	-	-	-	-	-	-	-	-
23	*Cellobiose*	-	-	-	-	-	-	-	-	-	-
24	Esculin hydrolysis	-	-	-	-	-	-	-	-	-	-
25	Sorbitol	-	-	-	-	-	-	-	-	-	-

The diagnostic features herein agree with those given by Fang *et al.* (2006) for isolates of *Edwardsiella tarda* from the middle intestinal of the Asian catfish and with the brief characters indicated by Achary *et al.* (2007) as characterized of *E. tarda*.

Moreover, the present study agree with Nougayrede *et al.* (1994) and Matsuok (2004), which isolated *E. tarda* from the middle intestinal of Asian catfish and observed that these bacteria were causing diseases in both humans and animals. They further noted that, edwardsiellosis in fish, produced adverse effects in the fisheries of many countries. In addition these bacteria are a health hazard for humans, birds, mammals, and fish, causing a number of potentially crippling diseases (Thune, 1993; Plumb, 1999; Nucci *et al.*, 2002).

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عزل وتشخيص *Edwardsiella tarda* من الأمعاء الوسطى لأسماك الجري النهري الاسيوي, Asian catfish, *Silurus triostegus* (Heckel, 1843)

عقيل جميل منصور[1], سعد شاكر مهدي[2] و شيماء جبار ريسان[1]
[1]كلية التربية للعلوم الصرفة، [2]كلية العلوم، جامعة البصرة، البصرة - العراق

المستخلص - مثلت الدراسة الحالية التسجيل الأول للبكتريا *Edwardsiella tarda* التي تنتمي لعائلة البكتريا المعوية Enterobacteriaceae, على صعيد الدراسات المحلية في العراق، والتي جمعت من الأمعاء الوسطى لأسماك الجري النهري الاسيوي (Asian Catfis) *Silurus triostegus*. إذ تم جمع 25 عينة مختلفة الأوزان والأطوال من أسماك الجري، تراوحت بين 350 - 750 غم و 250 - 650 ملم على التوالي خلال شهر كانون الأول 2006 بصورة عشوائية من منطقة المسحب في نهر كرمة علي باستعمال شباك الكرفة. أظهرت نتائج الدراسة عزل وتشخيص 10 عزلات من جراثيم *Edwardsiella tarda*.