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### SHORT COMMUNICATION

## MORPHOLOGICAL DESCRIPTION OF TWO LEECH SPECIES (ANNELIDA, HIRUDINEA) WHICH USED IN SOME ALTERNATIVE MEDICINE CLINICS IN BAGHDAD PROVINCE, IRAQ



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### ABSTRACT

The aim of this study is to describe the leech species that are used in some of the alternative medicine clinics in Baghdad Province based on morphometric measurements and colouring pattern of the body. A collection of twenty leeches was provided from some clinics. All specimens were identified and described based on standard available keys. The morphometric characteristics and colouring patterns were recorded and the indicated that these leeches were *Hirudo orientalis* Utevsky & Trontelj, 2005 and *H. verbana* Carena, 1820.

Keywords: *Hirudo*, Leeches, Morphometric measurements.

### INTRODUCTION

Leeches belong to phylum Annelida which is a large phylum that contains 22,000 species. This group of animals has significant impacts on the environment, agriculture and health (Jaweir and Al-Sarai, 2016; Solijonov and Umarov, 2022). The use of leeches for medical and therapeutic purposes has a long history (Ali, 1948; Ma *et al.*, 2021). Leeches have a history of secreting biologically active substances, particularly in their saliva (Shakouri and Wollina, 2021). Leeches were employed for a variety of illnesses by ancient Egyptian, Indian, Greek, and Arab physicians, from the common application for bleeding to systemic illnesses such as skin diseases, nervous system abnormalities, urinary and reproductive system difficulties, inflammation, and dental problems (Brooks, 2021). Numerous studies on leech saliva recently revealed the presence of a number of bioactive compounds (Liu *et al.*, 2019).

One of the many genera of leech that have drawn interest from people in various human endeavors is *Hirudo* Linnaeus, 1758. This genus seems to have its origins in Asia before spreading eastward and westward toward Europe. *Hirudo medicinalis* Linnaeus, 1758; *H. verbana* Carena, 1820; *H. troctina* Johnson, 1816; *H. orientalis* Utevsky & Trontelj, 2005 and *H. sulukii* Saglam, Saunders, Lang & Shain, 2016, five closely related living species, are being utilized in a variety of medical procedures (Elliott and Kutschera, 2011). Due to their widespread usage in surgery and medicine, the medicinal leeches of the genus *Hirudo* are

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well-known invertebrates that have undergone extensive biological and physiological researches (Lemke *et al.*, 2013) They were additionally investigated historically, ecologically, and genetically (Trontelj and Utevsky, 2012). In the eighteenth and early nineteenth centuries, large quantities of medical leeches were collected from fields and water ponds, but by the end of that time, the leeches had become scarce in many nations (Kutschera and Elliott, 2014). Despite the similarities among the *Hirudo* species, they can be distinguishable from one another using external features (Solgi *et al.*, 2021). The length of the body, the system of annulation, the number of segments before and after the clitellum, and the colour of the dorsal and ventral surfaces were all considered important characteristics in the classical study of taxonomy (Khalid *et al.*, 2022). A few clinics in Iraq utilize medicinal leeches to treat a few diseases. This paper is performed to describe two of the commercial leech species that are frequently used in alternative medicine clinics in the Baghdad, Iraq.

**Specimens' collection:** The leeches (n=20) used in this study were acquired between January and March 2022 from a few clinics and scientific centers in Baghdad, Iraq. These included: Alhwaya centers for studies, researches and training, Al-Yermok; Rafi center for chine medicine, Al Monsoor and Al-Huda Center for Complementary Cedicine, Baghdad Aljadeeda. All of these clinics and centers were authorized by General Syndicate for Complementary and Herbal Medicine, Iraq. After relaxing in 10% ethanol, all leeches were fixed in 96% ethanol. The morphological identification of preserved specimens was completed using an ocular micrometer (AL-Ameen and Jawair, 2019; Ayhan *et al.*, 2021) in accordance with the standard keys after they were pinned under running water (Ahmed *et al.*, 2015; Sağlam, 2019; Wang *et al.*, 2022). The body colour pattern and other morphological characteristics of leeches were observed and photographed. Leeches were examined to determine their diameter and length. As well as the diameter of anterior and posterior suckers were reported. Moreover anterior sucker/body length ratio, posterior sucker/body length ratio and posterior sucker/anterior sucker ratio were calculated.

**Description and Discussion**

Leech specimens in this study were gathered from a few clinics in Baghdad, Iraq. Two species of leech, *Hirudo orientalis* (n=10) and *Hirudo verbana* (n=10), were identified based on morphological parameters. Despite the similarities between the *Hirudo* species, they could be distinguished from one another based on the external features (Hussain *et al.*, 2022). The specimens of *Hirudo orientalis* were large cylindrical in shape. Their average length was (33.69±11.64) mm. The average length of the *H. orientalis* samples in this study was within the length range that was previously recorded by (Utevsky and Trontelj, 2005), although the maximum length that was recorded in their study was more than the averages recorded in the present study. The average width was 7.51 ±1.19 mm. The average size of the anterior sucker was 3.3±0.38 mm, but the average size of the posterior sucker was 4.34±0.78 mm. The mean of anterior sucker/body length ratio was 0.105±0.024, the mean of posterior sucker/body length ratio was 0.135±0.025 and the mean of posterior sucker/anterior sucker ratio was 1.315±0.158 (Tab. 1). The strip was divided into circular patches in the dorsal perspective. The predominant colour of the dorsal surface is grass green, with two thin, fragmented orange

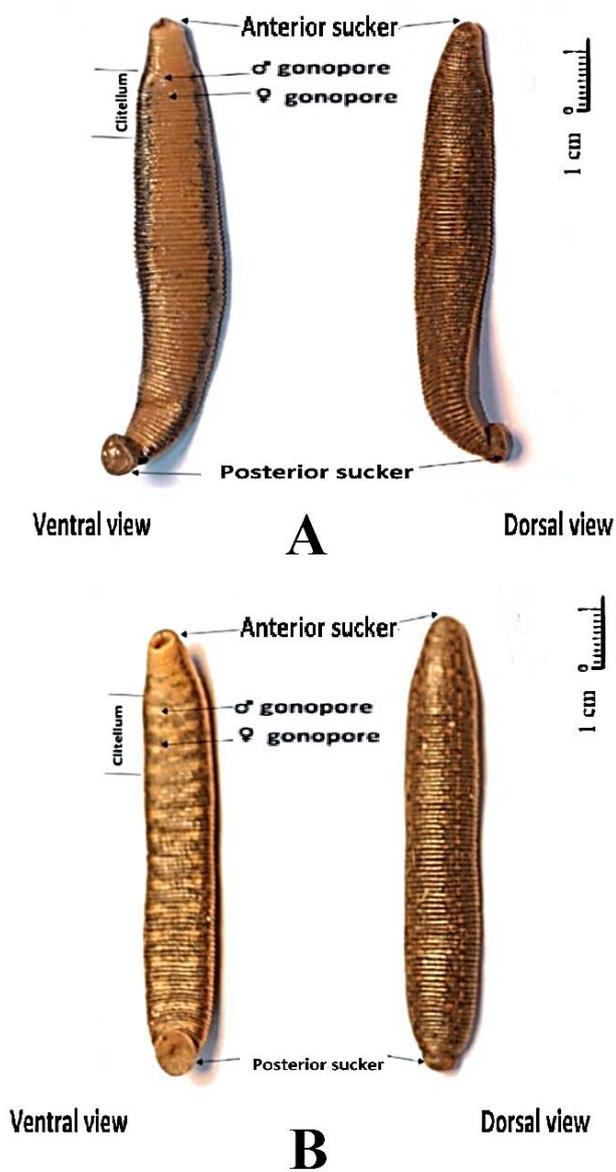
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paramedian lines and two broad, orange paramarginal stripes that enclose black specks that are grouped in quadrangular or spherical groups (Pls. 1 A).

*H. verbana* had a lot of similarities and some differences in its morphology with other species of isolated medicinal leeches (*Hirudo* spp.). In this study, their length was  $42.51 \pm 8.44$  mm. The average width was  $7.33 \pm 1.07$  mm wide. The average size of the anterior sucker was  $3.95 \pm 0.41$  mm, whereas the average size of the posterior sucker was  $5.31 \pm 0.79$  mm. The mean of anterior sucker/body length ratio was recorded as  $0.096 \pm 0.016$ , the mean of posterior sucker/body length ratio was  $0.127 \pm 0.016$  and the mean of posterior sucker/anterior sucker ratio was  $1.345 \pm 0.153$  (Tab. 1).

The lengths and measurements of the *H. verbana* that appeared in this study were consistent with the study of Ceylan and Çetinkaya (2021). *Hirudo verbana* has yellow, green, and black colouring. The dorsal portion had black bands with white specks. Two additional orange stripes were present in both lateral portions. Broad red or orange paramedian dorsal stripes and a greenish venter with two longitudinal stripes at its edges might be seen in the colouring pattern. On the venter, there are occasionally few, dispersed dark spots (Pl.1 B). The results indicate that most species of medical leeches used in some alternative medicine clinics are *H. orientalis* and *H. verbana*. The results of this study depended only on the measurements and colour pattern of the medical leech, but more investigations such as molecular studies and saliva analysis may be needed to confirm the species.

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**Plate (1):** (A) Dorsal and ventras of *H. orientalis* collected from a clinic in Baghdad, (B) Dorsal and ventral same as mentioned *H. verbana* collected from a clinic in Baghdadl view.

**Table (1):** The width, length, anterior sucker, ventral sucker, anterior sucker/body length ratio, posterior sucker/body length ratio and posterior sucker/anterior sucker ratio measurements of *H. orientalis* collection.

Species		Maximum body width (mm)	Total body length (mm)	Anterior sucker (mm)	Posterior sucker (mm)	Anterior sucker/total body ratio	Posterior sucker/total body ratio	Posterior sucker/ anterior sucker ratio
<i>H.orientalis</i> (n=10)	Min-Max	6.37-10.27	22.54-59.24	3-4.24	3.78-6.44	0.063-0.15	0.092-0.173	1.115-1.519
	Mean	7.51	33.69	3.305	4.34	0.105	0.135	1.315
	SD	1.19	11.64	0.381	0.78	0.024	0.025	0.158
<i>H. verbena</i> (n=10)	Min-Max	6.06-9.54	34.2-54.05	3.46-4.35	4.39-6.87	0.065-0.121	0.101-0.149	1.18-1.663
	Mean	7.33	42.51	3.95	5.31	0.096	0.127	1.345
	SD	1.07	8.44	0.41	0.791	0.016	0.016	0.153

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#### CONFLICT OF INTEREST STATEMENT

The authors have no conflicts of interest to be mentioned

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الوصف المظهري لنوعين من العلق (Annelida, Hirudinea) المستخدم في بعض  
عيادات الطب البديل في محافظة بغداد، العراق

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الخلاصة

هدفت الدراسة الحالية الى وصف نوعين من العلق الطبي المستخدمة في عيادات الطب البديل في بغداد اعتمادا على القياسات المظهرية و النمط اللوني للجسم. تم الحصول على عينات العلق الطبي من هذه العيادات الخاصة في محافظة بغداد. وتم تشخيصها و وصفها بالاعتماد على المفاتيح التشخيصية المتوفرة. تم تسجيل كل القياسات المظهرية و الانماط اللونية للعينات والتي اشارت الى ان العلق الطبي الذي تم جمعه يعود للنوعين *H. verbana* و *Hirudo orientalis* Utevsky & Trontelj, 2005. Carena, 1820.