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Original Article

Status of Ichthyofaunal Diversity of River Ganga in Malda District of West Bengal, India

Suchismita Medda[1], Santi Ranjan Dey[2*]

[1] *Mohiary Ranibala Kundu Choudhury Balika Vidyalaya, Andul-Mouri, Howrah, West Bengal 711302, India.*
[2] *Department of Zoology, Rammohan College, Kolkata, West Bengal 700009, India.*

**Correspondence E-mail :* srdey1@rediffmail.com

Abstract

The river Ganges is the largest river in India and the fifth longest in the world. Although, many studies on fish ecology and systematic have been conducted largely to improve fisheries but fish diversity and their distribution pattern from conservation point of view have never been adequately addressed in the Ganges River . The objective of present study was to explore the present Ichthyofaunal diversity of the stretch of Ganga at Malda district of West Bengal. The result showed that 69 freshwater fish species belonging to 9 Orders, 24 Families was found in Ganga stretch of Malda District of West Bengal, India.

Keywords: *Malda; Ganga; Ichthyofauna; IUCN.*

Introduction

Aquatic ecosystem is divided into lotic and lentic system based on flow. Lotic system is mainly comprised of river and sea and lentic system includes Beel, Lake, pond etc. Except sea all these water bodies contain freshwater ecosystem. Riverine Ecosystem is one of the most important harbours of freshwater fish species on earth. Fish is very important among vertebrates with respect to its socioeconomic and nutritional value as it provides protein, minerals and livelihood for many people (Jaya *et al,* 2020). The river Ganges is the largest river in India and the fifth longest in the world. Although, many studies on fish ecology and systematic have been conducted largely to improve fisheries but fish diversity and their distribution pattern from conservation point of view have never been adequately addressed in the Ganges River (Sarkar *et al,* 2012). Hamilton (1822) described 272 fish species throughout the stretches of Ganga from source of origin at Himalaya to the estuary at Bay of Bengal (Singh and Johal 2009). Most of the studies on River Ganga have been conducted on upper and middle stretches of Ganga (Kumar et al, 2019). The Ganga river harbors richest fish diversity in Indian subcontinent (Bilgrami *et al,* 1992; Dwivedi *et al,* 2016). The Ganga river fishery resources also provide a wide range of other ecosystem services (Pathak *et al,* 2014; Dwivedi *et al,* 2016). The Ganga river also supports small aquatic ecosystem for their flora and fauna diversity. Some part of the lower Ganga flows through the West Bengal before merging into Bay of Bengal. Due to presence of Farakka Barrage on the river Ganga in Malda district, the river appears to be huge but near stagnant in nature. The barrage also create a barrier in the natural mixing and migration of fish. The objective of present study is to explore the present Ichthyofaunal diversity of the stretch of Ganga at Malda district of West Bengal which will create a baseline data for comparison of Ichthyofauna in future.

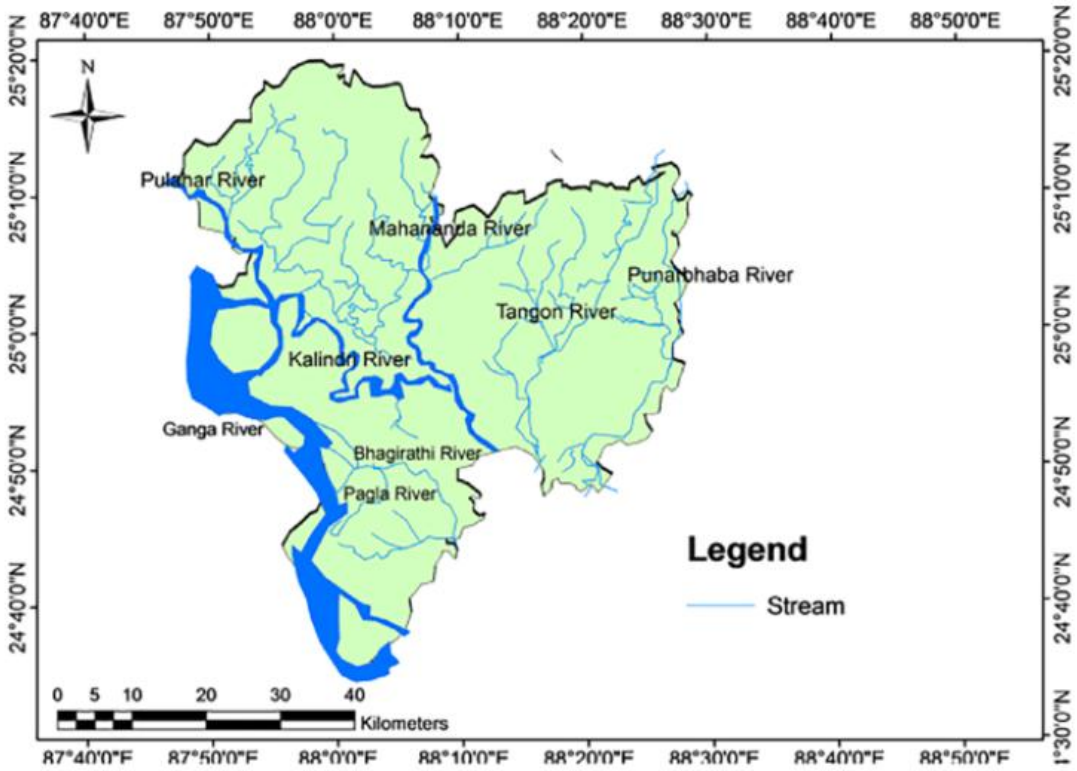


Fig. 1. Stretch of River Ganga, District Malda, West Bengal

Materials and Methods

The river Ganga was surveyed from 24°52'15" N 87°58'17" E to 24°51'36" N 87°58'17" E in the Pre-monsoon, Monsoon and Post Monsoon periods for 5 years (2014-2019). The local markets were also surveyed for the information about fish. The fishermen associated with the river were contacted, interviewed with specific questions and their catch were analysed for collection of fishes. The collected fish were identified, photographed and preserved. Taxonomic Identification was done primarily from the books of Day, F (1876), Jayaram, K.C. (1981), Talwar and Jhingran (1991) and Barman, R. (2007). The fish fauna has been arranged taxonomically according to the classification of Jayaram, K.C. (1981). Status of the species was also studied from the data of global (IUCN) abundance status from the conservation point of view.

Results

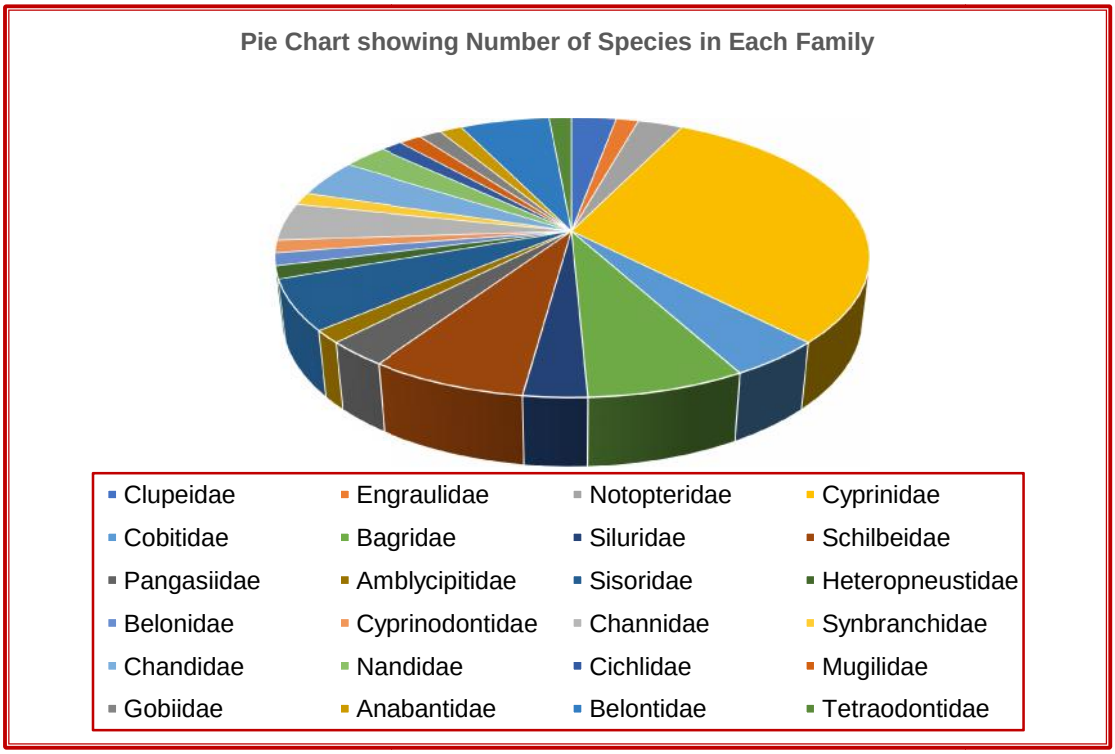
Table 1: Ichthyofauna of Ganga River in Malda District with local name and IUCN status

Name of Fishes	Local name	IUCN status (Global)
Order: Clupeiformes **Family: Clupeidae**		
Gudusia chapra(Hamilton, 1822)	Khoira	Least Concern (LC) (Decreasing) Date assessed: 06 October 2009
Gonialosa manmina (Hamilton, 1822)	Chapila	Least Concern (LC) Date assessed: 06 October 2009
Family: Engraulidae		
Setipinna phasa (Hamilton, 1822)	Fasa	Least Concern (LC) Date assessed: 04 December 2019
Order: Osteoglossiformes **Family: Notopteridae**		
Notopterus notopterus (Pallas, 1769)	Foli	Least Concern (LC)

		(Stable) Date assessed: 30 August 2019
Chitala chitala (Hamilton, 1822)	Chital	Near Threatened (NT) ; Date assessed: 28 May 2010
Order: Cypriniformes		
Family: Cyprinidae		
Salmostoma bacaila (Hamilton, 1822)	Chela	Least Concern (LC) ; Date assessed: 17 March 2011
Hypophthalmichthys molitrix (Valenciennes, 1844)	Silver carp	Near Threatened (NT) ; Date assessed: 20 January 2011
Cabdio morar (Hamilton, 1822)	Morari/Piuli	Least Concern (LC) ; Date assessed: 09 October 2009
Amblypharyngodon mola (Hamilton, 1822)	Mourala	Least Concern (LC) ; Date assessed: 09 October 2009
Barilius barila (Hamilton, 1822)	Korsa/ Tila	Least Concern (LC) ; Date assessed: 22 January 2010
Cyprinus carpio(Linnaeus, 1758)	American Rui, Mirror carp	Vulnerable (VU); Date assessed: 1 January,2008 **(Exotic)**
Puntius chola (Hamilton, 1822)	Punti	Least Concern (LC) ; Date assessed: 20 March 2010
Puntius conchonius(Hamilton, 1822)	Punti	Least Concern (LC) ; Date assessed: 22 March 2010
Puntius puntio(Hamilton, 1822)	Punti	Not Evaluated
Puntius sophore(Hamilton, 1822)	Puti	Least Concern (LC) ; Date assessed: 20 March 2010
Puntius terio(Hamilton 1822)	Puti	Least Concern (LC) ; Date assessed: 18 March 2010
Pethia ticto (Hamilton, 1822)	Titputi	Least Concern (LC) ; Date assessed: 22 March 2010
Osteobrama cotio cotio (Hamilton, 1822)	Bojonmuri	Least Concern (LC) ; Date assessed: 09 October 2009
Labeo bata (Hamilton, 1822)	Bata	Least Concern (LC) ; Date assessed: 17 March 2011
Labeo calbasu (Hamilton, 1822)	Kalbaus	Least Concern (LC) ; Date assessed: 21 March 2010
Labeo rohita (Hamilton, 1822)	Rui	Least Concern (LC) ; Date assessed: 20 March 2010
Cirrhinus mrigala (Hamilton, 1822)	Mrigel	Least Concern (LC) ; Date assessed: 21 March 2010
Cirrhinus reba(Hamilton, 1822)	Rai khor	Least Concern (LC); Date assessed: 29 September 2010
Gibelion catla (Hamilton, 1822)	Katla	Least Concern (LC) ; Date assessed: 08 October 2009
Ctenopharyngodon idella(Valenciennes, 1844)	Grass carp	Not Evaluated (**Exotic)**
Garra annandalei (Hora, 1921)	Bhola	Least Concern (LC) ; Date assessed: 09 October 2009
Family: Cobitidae		
Acanthocobitis botia (Hamilton, 1822)	Balichata	Least Concern (LC) ; Date assessed: 01 March 2007
Botia lohachata (Chaudhuri, 1912)	Boumach	Not Evaluated (NE)
Lepidocephalichthys guntea (Hamilton, 1822)	Gunte	Least Concern (LC) ; Date assessed: 06 March 2012
Order: Siluriformes		

Family: Bagridae		
Rita rita (Hamilton, 1822)	Ritha	Least Concern (LC) ; Date assessed: 26 March 2010
Mystus gulio (Hamilton, 1822)	Gulsatengra	Least Concern (LC) ; Date assessed: 11 August 2019
*Mystus vittatus (*Bloch, 1794)	Sona tengra	Least Concern (LC) ; Date assessed: 05 October 2009
Mystus tengara (Hamilton, 1822)	Bojretengra	Least Concern (LC) ; Date assessed: 05 October 2009
Sperata aor (Hamilton, 1822)	Aar	Least Concern (LC) ; Date assessed: 19 March 2011
Family: Siluridae		
Ompok bimaculatus (Bloch, 1794)	Deshipabda	Near Threatened (NT) ; Date assessed: 13 October 2009
Wallago attu (Bloch and Schneider, 1801)	Boal	Vulnerable (VU); Date assessed: 12 August 2019
Family: Schilbeidae		
Ailia coila(Hamilton, 1822)	Banspata/kajli	Near Threatened (NT) ; Date assessed: 21 September 2010
Pachypterus atherinoides (Bloch, 1794)	Paloatengra/ Pat tengra	Least Concern (LC) ; Date assessed: 13 October 2009
Clupisoma garua (Hamilton, 1822)	Ghero	Least Concern (LC) ; Date assessed: 13 October 2009
Eutropiichthy svacha (Hamilton, 1822)	Bacha	Least Concern (LC) ; Date assessed: 13 October 2009
Silonia silondia (Hamilton, 1822)	Silone	Least Concern (LC) ; Date assessed: 01 March 2007
Family: Pangasiidae		
Pangasius pangasius (Hamilton, 1822)	Pangas	Least Concern (LC) ; Date assessed: 13 October 2009
Pangasianodon hypophthalmus (Sauvag, 1878)	Pangas	Endangered (EN) ; Date assessed: 19 January 2011
Family: Amblycipitidae		
Amblyceps apangi (Nath and Dey, 1989)	Botsingi	Least Concern (LC) ; Date assessed: 16 December 2009
Family: Sisoridae		
Bagarius bagarius(Hamilton,1822)	Bagh aar	Near Threatened (NT) ; Date assessed: 13 October 2009
Conta conta(Hamilton, 1822)	Contaaar	Data deficient (DD) ; Date assessed: 12 October 2009
Pseudolaguvia shawi (Hora, 1921)	Tel gagor	Least Concern (LC) ; Date assessed:12 October 2009
Glyptothorax telchitta(Hamilton, 1822)	Telchita	Least Concern (LC) ; Date assessed: 13 October 2009
Family: Heteropneustidae		
Heteropneustes fossilis(Bloch, 1794)	Shingi	Least Concern (LC) ; Date assessed: 11 August 2019
Order: Atheriniformes		
Family: Belonidae		
Xenentodon cancila(Hamilton, 1822)	Kankla	Least Concern (LC) ; Date assessed: 12 August 2019
Order: Atheriniformes		
Family: Cyprinodontidae		
Aplocheilus panchax (Hamilton, 1822)	Tinchokh	Least Concern (LC) ; Date assessed: 21 June 2018
Order: Channiformes		
Family: Channidae		

Channa marulius (Hamilton ,1822)	Shal	Least Concern (LC) ; Date assessed: 06 October 2009
Channa punctata (Bloch, 1793)	Sati	Least Concern (LC) ; Date assessed:11 August 2019
Channa striata (Bloch, 1793)	Shol	Least Concern (LC) ; Date assessed:11 August 2019
Order: Synbranchiformes		
Family: Synbranchidae		
Monopterus cuchia (Hamilton, 1822)	Cuche	Least Concern (LC) ; Date assessed: 20 March 2010
Order: Perciformes		
Family: Chandidae		
Chanda nama (Hamilton, 1822)	Chada	Least Concern (LC) ; Date assessed: 16 March 2010
Parambassis ranga (Hamilton, 1822)	Chada	Least Concern (LC) ; Date assessed: 16 March 2011
Parambassis baculis (Hamilton, 1822)	Chada	Least Concern (LC) ; Date assessed: 20 March 2010
Family: Nandidae		
Badis badis (Hamilton, 1822)	Bot koi	Least Concern (LC) ; Date assessed: 26 March 2010
Nandus nandus(Hamilton, 1822)	Nandos	Least Concern (LC) ; Date assessed: 12 October 2009
Family: Cichlidae		
Oreochromis niloticus (Linnaeus, 1758)	Nilontica	Least Concern (LC) ; Date assessed: 02 March 2018**(Exotic)**
Family: Mugilidae		
Rhinomugil corsula (Hamilton, 1822)	Khorsol	Least Concern (LC) ; Date assessed: 20 March 2010
Family: Gobiidae		
Glossogobius giuris (Hamilton, 1822)	Bele	Least Concern (LC) ; Date assessed: 11 August 2019
Family: Anabantidae		
Anabas testudineus (Bloch, 1792)	Koi	Least Concern (LC) ; Date assessed: 10 August 2019
Family: Belontidae		
Trichogaster fasciata (Bloch and Schneider, 1801)	Kholse	Least Concern (LC) ; Date assessed: 21 January 2010
Trichogaster lalius (Hamilton,1822)	Kholse	Least Concern (LC) ; Date assessed: 21 January 2010
Trichogaster chuna (Hamilton,1822)	Kholse	Least Concern (LC) ; Date assessed: 12 October 2009
Trichogaster labiosa (Day, 1877)	Kholse	Least Concern (LC) ; Date assessed: 21 January 2010
Order: Tetraodontiformes		
Family: Tetraodontidae		
Leiodon cutcutia (Hamilton, 1822)	Tyapa	Least Concern (LC) ; Date assessed: 11 October 2009


Pie Chart showing Number of Species in Each Family
Clupeidae
Engraulidae
Notopteridae
Cyprinidae
Cobitidae
Bagridae
Siluridae
Schilbeidae
Pangasiidae
Amblycipitidae
Sisoridae
Heteropneustidae
Belonidae
Cyprinodontidae
Channidae
Synbranchidae
Chandidae
Nandidae
Cichlidae
Mugilidae
Gobiidae
Anabantidae
Belontidae
Tetraodontidae

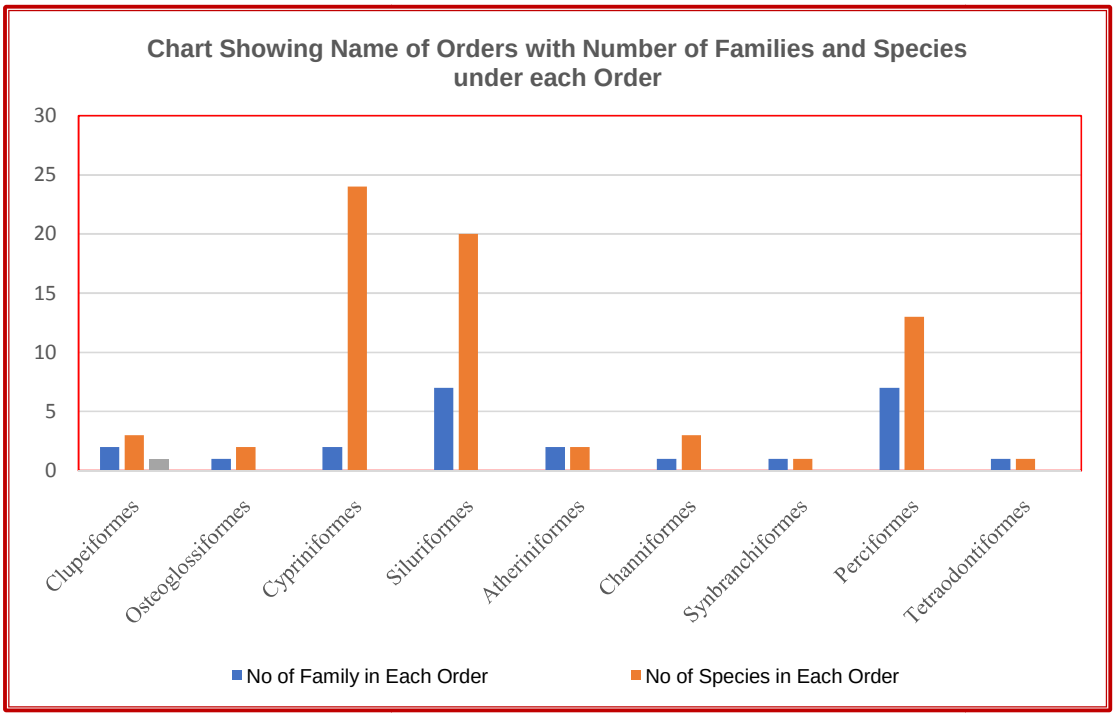


Chart Showing Name of Orders with Number of Families and Species under each Order
30
25
20
15
10
5
0
Clupeiformes
Osteoglossiformes
Cypriniformes
Siluriformes
Atheriniformes
Channiformes
Synbranchiformes
Perciformes
Tetraodontiformes
No of Family in Each Order
No of Species in Each Order

Table 2: Representing Fish Families with Number of Species Belonging to Them:

Sl. No.	Name of Family	No. of Species in each Family
1	Clupeidae	2
2	Engraulidae	1
3	Notopteridae	2
4	Cyprinidae	21
5	Cobitidae	3
6	Bagridae	5
7	Siluridae	2
8	Schilbeidae	5
9	Pangasiidae	2
10	Amblycipitidae	1
11	Sisoridae	4
12	Heteropneustidae	1
13	Belonidae	1
14	Cyprinodontidae	1
15	Channidae	3
16	Synbranchidae	1
17	Chandidae	3
18	Nandidae	2
19	Cichlidae	1
20	Mugilidae	1
21	Gobiidae	1
22	Anabantidae	1
23	Belontidae	4
24	Tetraodontidae	1

Table 3: Representing Name of the Orders with Number of Families and Species found under each Order:

Sl. No.	Name of the Order	No of Family in Each Order	No of Species in Each Order
1	Clupeiformes	2	3
2	Osteoglossiformes	1	2
3	Cypriniformes	2	24
4	Siluriformes	7	20
5	Atheriniformes	2	2
6	Channiformes	1	3
7	Synbranchiformes	1	1
8	Perciformes	7	13
9	Tetraodontiformes	1	1

Image of some Selected Fish

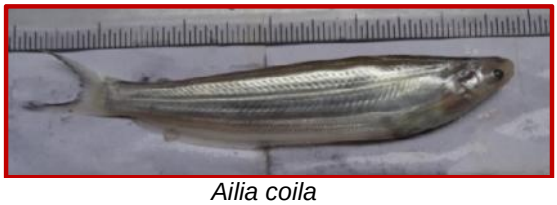
Gonialosa manmina

Chitala chitala

Osteobrama cotio cotio

Acanthocobitis botia

Wallago attu



Ailia coila

Rita rita

Discussion

The result showed that 69 freshwater fish species belonging to 9 Orders, 24 Families is found in Ganga stretch of Malda District. Out of 24 families Cyprinidae was found to be dominant having 21 species followed by Bagridae having 5 species. Order wise Cypriniformes contain 24 species followed by Siluriformes with 20 species and Perciformes with 13 species. Order Siluriformes contained 7 families and exhibited maximum number of families. In this study 3 fishes, *Glyptothorax telchitta*(Hamilton, 1822), *Amblyceps apangi* (Nath and Dey, 1989) and *Garra annandalei* (Hora, 1921) were found to be locally very rare though they all are in Least Concern (LC) category in IUCN list. 4 exotic species, *Oreochromis niloticus* (Linnaeus, 1758), *Ctenopharyngodon idella* (Valenciennes, 1844), *Cyprinus carpio*(Linnaeus, 1758) and *Hypophthalmichthys molitrix* (Valenciennes, 1844) were also found in this stretch of Ganga.

Conclusion

The objective of present study was to explore the present Ichthyofaunal diversity of the stretch of Ganga at Malda district of West Bengal. The result showed that 69 freshwater fish species belonging to 9 Orders, 24 Families was found in Ganga stretch of Malda District of West Bengal, India.

Acknowledgments

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Conflicts of Interest

The authors declare that there are no conflicts of interest.

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