

# New records of Chewing Lice (Phthiraptera) From Some Bird Species in Turkey

Türkiye'deki Bazı Kuş Türlerinden Yeni Çiğneyici Bit (Phthiraptera) Türü Kayıtları

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## ABSTRACT

**Objective:** This study was carried out to detect chewing-lice found on some birds in Turkey.

**Methods:** For this aim, a Eurasian collared dove (*Streptopelia decaocto*), a budgerigar (*Melopsittacus undulatus*) and a marbled duck (*Marmaronetta angustirostris*) were examined for the louse.

**Results:** *Columbicola bacillus* (Giebel, 1866) was found on a Eurasian collared dove (*Streptopelia decaocto*), *Afrimenopon waar* (Eichler, 1947) on a budgerigar (*Melopsittacus undulatus*) and *Anatoecus icterodes* (Nitzsch, 1818) on a marbled duck (*Marmaronetta angustirostris*).

**Conclusion:** All three louse species were recorded for the first time in Turkey. *Anatoecus icterodes* was reported for the first time from marbled duck in the worldwide. Therefore, marbled duck is a new host for *Anatoecus icterodes*. (*Türkiye Parazitol Derg* 2010; 34: 168-73)

**Key Words:** Phthiraptera, *Columbicola columbae*, *Afrimenopon waar*, *Anatoecus icterodes*, Turkey

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## ÖZET

**Amaç:** Bu araştırma bazı kuşlarda bulunan bit türlerini belirlemek için yapılmıştır.

**Yöntemler:** Bu amaçla bir adet Kumru (*Streptopelia decaocto*), bir adet Muhabbet Kuşu (*Melopsittacus undulatus*) ve bir adet Yaz Ördeği (*Marmaronetta angustirostris*) bit yönünden incelenmiştir.

**Bulgular:** Kumru (*Streptopelia decaocto*)'da *Columbicola bacillus* (Giebel, 1866), Muhabbet Kuşu (*Melopsittacus undulatus*)'nda *Afrimenopon waar* (Eichler, 1947) Yaz Ördeği (*Marmaronetta angustirostris*)'nde ise *Anatoecus icterodes* (Nitzsch, 1818)'e rastlanmıştır.

**Sonuç:** Bu türlerin üçü de Türkiye'den ilk kez bildirilmiş, *Anatoecus icterodes* ise yaz ördeğinden dünyada ilk kez rapor edilmiştir. (*Türkiye Parazitol Derg* 2010; 34: 168-73)

**Anahtar Sözcükler:** Phthiraptera, *Columbicola bacillus*, *Afrimenopon waar*, *Anatoecus icterodes*, Türkiye

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## INTRODUCTION

Only a few studies have been conducted on the Phthiraptera fauna of birds in Turkey (1-19). Because of this, the number of louse species recorded from birds in Turkey is limited. Three budgerigars had been examined for the louse up to this study (5), but no louse specimen was found on the birds. On the other hand, there was no study related to louse species occurring on Eurasian collared dove and marbled duck in Turkey. This study was carried out to detect the louse species of these birds.

## MATERIALS AND METHODS

One marbled duck (*Marmaronetta angustirostris*), one Eurasian collared dove (*Streptopelia decaocto*) and one budgerigar (*Melopsittacus undulatus*) were examined for the louse. The marbled duck was killed by a car collision. The Eurasian collared dove and budgerigar, which were brought for treatment to the Veterinary Faculty of Selçuk University, were found to be infested with louse. Two lice specimens from the marbled duck, one from the dove and four from the budgerigar were collected. They were pre-

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served in 70% alcohol, cleared in KOH 10%, washed with distilled water and stored in alcohol series 70%, 80%, 90% and 99% in four consecutive days, respectively. They were mounted on slides in Canada balsam and examined by a light microscope.

## RESULTS

The lice specimens were identified as *Anatoecus icterodes* (Nitzsch, 1818) from the marbled duck, *Columbicola bacillus* (Giebel, 1866) from the Eurasian collared dove and *Afrimenopon waar* (Eichler, 1947) from the budgerigar. All three species as well as the genera *Anatoecus* and *Afrimenopon* were recorded for the first time for the Phthiraptera fauna of Turkey. In addition, *Anatoecus icterodes* was recorded on a marbled duck for the first time.

*Anatoecus icterodes* (Nitzsch, 1818)

Material examined: 1 ♀ 1 ♂

**Female:** The head is sub-conical, slightly more broad than long, the preocular region is narrowed, temples very wide. The hyaline membrane is concave anteriorly; dorsal anterior plate is glass-shaped, wide and shallow anterior is narrowed medially, relatively long, slender and rounded posteriorly. The trabecula is oval proximally; antenna have five segments, the first segment is wider and the second longer than the others. Temple has one long seta and four spines; occipital bands are parallel; gular plate is sub-pentagonal (Fig. 1).

Prothorax is quadrangular, slightly broad posteriorly, longer than wide. Pterothorax is prominent laterally; convex posteriorly, and the posterolateral margin has one spin-like seta and 6 long setae on each side.

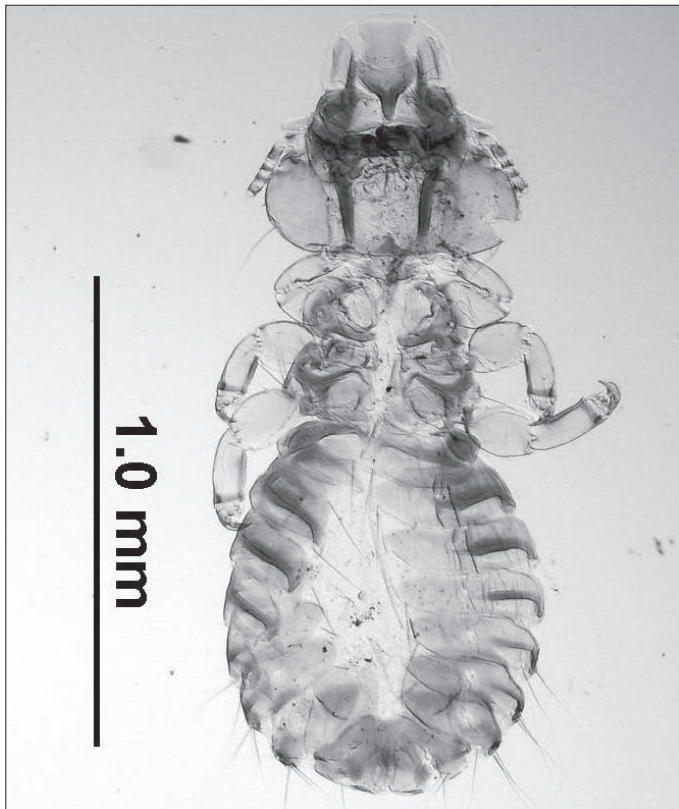


Figure 1. *Anatoecus icterodes*, female in ventral view, original

Abdomen is short, broad and rounded, slightly wider than the head. Paratergal plates are chitinized well. Segment I is well developed and notched anteromedially. Segments I-VII have one long seta in the posteroventral margin on each side. Lateral sides of segments VI-VIII have two long setae. Segment IX has two long and one short seta on the posterior margin. There are two clusters composed of two setae each, one short and one long.

**Male:** Similar to the female, but is slightly shorter. Abdominal tergites II-V are divided medially (Fig. 2). Genitalia: Basal plate is short and broad, parameres are relatively longer and enclosed proximally, penis is short. There is a well-developed horizontal band, curved posteriorly on each side. There is a vase-shaped pigmented area, oval, well-developed, concave anteriorly, edges extend to the anterior of segment VI.

Some measurements of *Anatoecus icterodes* were given in Table 1.



Figure 2. *Anatoecus icterodes*, male in ventral view, original

Table 1. Some dimensions of *Anatoecus icterodes* (in mm except HI)

	Female (n: 1)	Male (n: 1)
HL	0.53	0.47
HW	0.55	0.44
HI	0.95	1.08
TL	0.37	0.35
TW	0.44	0.38
AL	0.81	0.68
AW	0.69	0.61
Tot L	1.68	1.40

Abbreviations for measurements are: HL: Head Length; HW: Head Width in temples; HI: Head Index; TL: Thoracic Length; TW: Thoracic Width; AL: Abdominal Length; AW: Abdominal Width; Tot L: Total Length



*Afrimenopon waar* (Eichler, 1947)

Material examined: 1 ♀ 3 ♂♂

**Female:** Is relatively small, 1.5 mm (Fig. 3). Head is rounded in the anterior margin; temples rounded posteriorly; antennae are four segmented; preocular and occipital nodi moderately developed; occipital margin is slightly concave. Gular plate simple, pentagonal, narrowed anteriorly; gular plate has 4+4 setae on each side.

Prothorax is broad anteriorly; narrowed posteriorly. Prosternal plate is weakly developed, only the posterior part is evident. Mesosternal plate is moderately long, slender and with one seta. Metasternal plate has two setae.

Abdomen is 1,5-2 times longer than the width. Abdominal sternite III has two ctenidia on each side. Segments VII-IX are weakly developed. Posterior margin is rounded. Dorsal anal fringe possess 38 setae. Chaetotaxy was not examined well due to a lot of setae being broken, especially on the abdomen.

**Male:** Similar to, but smaller than the female, (Fig. 4). Head rounded anteriorly, three setae, one of them short and the others very long on the posterolateral margin of the head. Sitophore sclerite of hypopharynx weakly developed (Fig. 5). Six long and two short setae are on each side of the posterolateral margin of the prothorax. Posterolateral margin of the metathorax has six medium long setae on each side. Metathorax has four short setae medioanteriorly. They extend to the posterior margin of abdominal segment I. Mesosternal and metasternal plates have five or six setae. Venter of third femur has two ctenidia. Tergocentral setae as: I, 12-15; II, 14-16; III, 14-17; IV, 15-17; V, 15-18; VI, 13-14; VII, 11-14; VIII, 9-11. Genitalia: Basal apodeme narrow, parameres straight and slender, penis short, stout, rounded and slightly concave posteriorly, genital sac spinous.

Some measurements of *Afrimenopon waar* were given in Table 2.

*Columbicola bacillus* (Giebel, 1866)

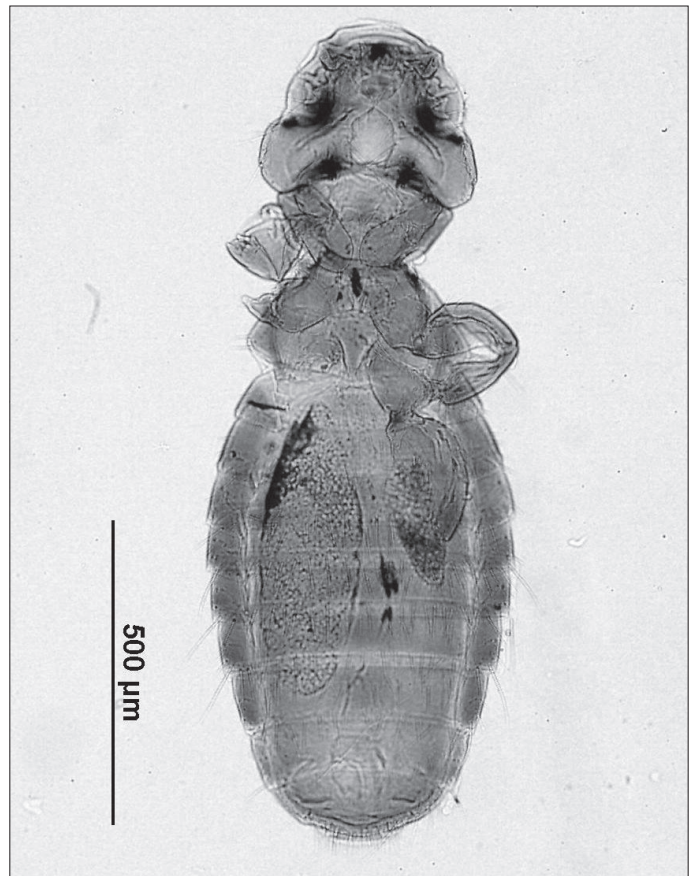
Material examined: 1 ♀

Body is long and slender (Fig. 6). Head is very long and slender posteriorly. Dorsal anterior plate relatively narrowed and 0,147

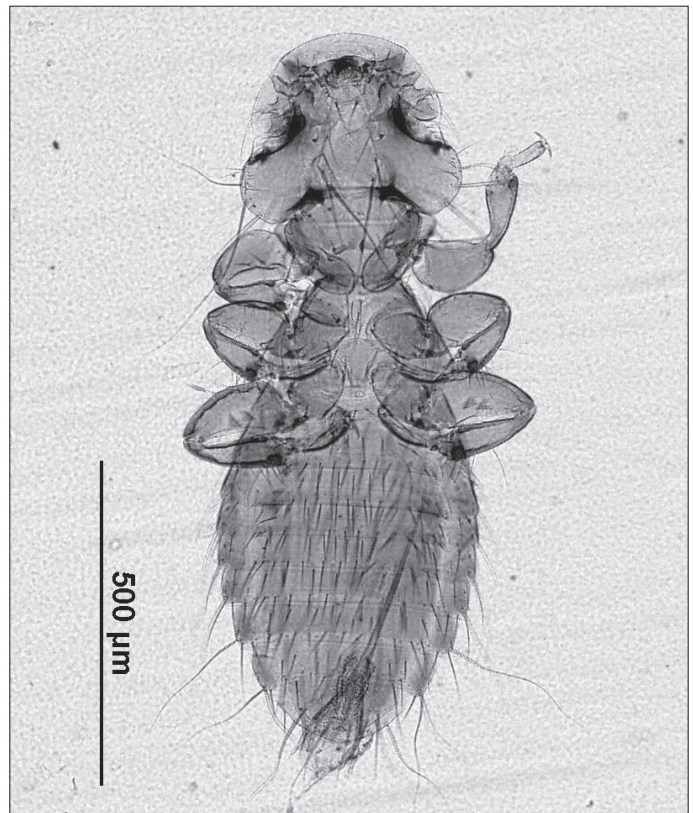
**Table 2.** Some dimensions of *Afrimenopon waar* (in mm, except HI)

	Female (n:1)	Male (n:3)		
		Min.	Max.	Av.
HL	0.32	0.31	0.32	0.32
HW	0.38	0.36	0.39	0.37
HI	0.84	0.83	0.94	0.88
TL	0.37	0.33	0.36	0.34
TW	0.39	0.31	0.34	0.32
AL	0.81	0.59	0.80	0.70
AW	0.53	0.40	0.42	0.41
Tot L	1.43	1.17	1.45	1.31

Abbreviations for measurements are: HL: Head Length; HW: Head Width in temples; HI: Head Index; TL: Thoracic Length; TW: Thoracic Width; AL: Abdominal Length; AW: Abdominal Width; Tot L: Total Length



**Figure 3.** *Afrimenopon waar*, female in ventral view, original



**Figure 4.** *Afrimenopon waar*, male in ventral view, original





Figure 5. *Afrimenopon waar*, male head, original

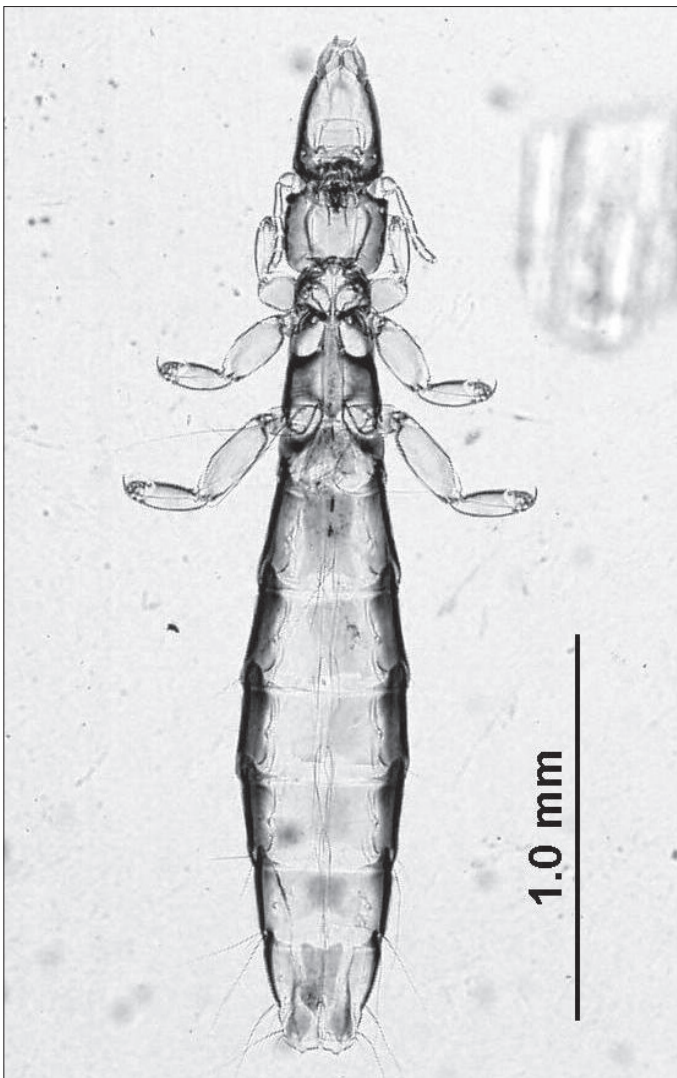


Figure 6. *Columbicola bacillus*, female, original

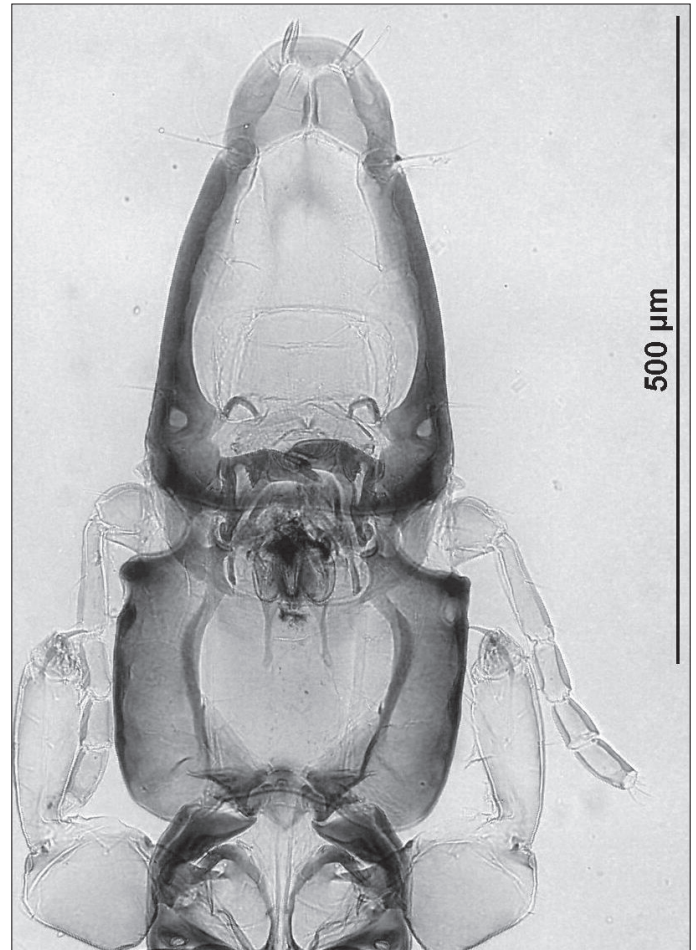


Figure 7. *Columbicola bacillus*, female head, original

mm wide (Fig. 7). Antenna with five segments; second is clearly longer than the others. Prothorax is slightly wider than long, while the pterothorax is longer than wide. There are very long two setae on each sides of the postero-lateral margin. Abdominal segments are weakly chitinized, pleural plates slender. A few setae are on all segments. There are four tergo-central setae, two anteriorly and close to the median line and the others close to the lateral margin and posteriorly on segments II-VIII. Ventral terminalia with 9 short setae are aligned along the sides of the median pigmented area (Fig. 8). Measurements of *C.bacillus*: HL 0,65; HW 0,28; HI 2,36; TL 0,42; TW 0,28; AL 1,73; AW 0,50; Total L 2,80.

#### DISCUSSION

A limited number of studies have been done on the Phthiraptera fauna of the birds in Turkey (1-15). In studies of the chewing lice on ducks (Anatidae) in Turkey (2, 5, 11, 19), *Anaticola anseris* (Linn, 1758) (= *Esthiopterum anseris*) was reported on domestic and wild geese (2, 19), *Anaticola crassicornis* (Scopoli, 1763) (= *Esthiopterum crassicorne*) and *Holomenopon obscurum* (Piaget, 1880) (= *Menopon obscurum*) was reported on various duck species (19). In Konya Zoo, some waterfowl (Anseriformes) such as the White-fronted Goose (*Anser albifrons*), Mallard (*Anas platyrhynchos*), Eurasian Wigeon (*Anas penelope*), Ruddy Shelduck (*Tadorna ferruginea*), Mute Swan (*Cygnus olor*) and Black Swan (*Cygnus atratus*) were examined, but no chewing lice



**Figure 8.** *Columbicola bacillus*, female, subgenital plate, original

were found (11). In this study, two specimens were obtained from the marbled duck (*Marmaronetta angustirostris*) and they were identified as *Anatoecus icterodes* (Nitzsch, 1818). The genus *Anatoecus* is a distinctive genus, characterised by the features of the head, chaetotaxy of the prothorax and other morphological characters. It has been reported on ducks, geese, and flamingos in the Afrotropical Region (20). Two lice species; *A. dentatus* and *A. icterodes* were found in the genus *Anatoecus* in Europe (21). Morphological characters of *A. icterodes* and/or *A. dentatus* were investigated in detail by some authors (20-26). This species is distinguished from *A. dentatus* (Scopoli, 1763) by the absence of the "effractor" in the male genitalia (20, 21, 25). In this study, no "effractor" was observed in the genitalia of the male specimen of *Anatoecus*. Other characters of the male genitalia were very similar to the figures in Clay and Hopkins (1960, text-figures 59-61; Plate 2, Fig.39) (21). *A. icterodes* has been reported as a cosmopolitan species occurring on various host species in the family Anatidae (25-27), but had not been previously reported on the marbled duck. Therefore, the marbled duck is a new host for *A. icterodes*.

The genus *Afrimenopon*, with one known species, *Afrimenopon waar* (Eichler, 1947), is not common. *A. waar* was originally described from the rosy-faced lovebird (*Agapornis roseicollis*) and named *Franciscoloa waar* by Eichler (28-31). However, due to the inadequacy of the original description of *Franciscoloa waar* (Eichler, 1947), Price (28) established the genus *Afrimenopon*

and included that species in the genus *Afrimenopon*. Sychra et al. (31) recorded this species on a captive budgerigar (*Melopsittacus undulatus*) and reported this species for the first time from Karachi, Pakistan. Formerly, Dik (5) investigated three budgerigars in Turkey, but did not find any louse specimen on the birds. Sychra et al. (31) reported that there were some slight differences between their specimen and Price's. In this study, almost all the morphological characters of our specimens were identical to those of Price (28) and Sychra et al. (31). However, almost all the dimensions examined in the study, except head length, were smaller than those examined by Price (28) and closer to those examined by Sychra et al. (31).

No study have been done on the chewing lice of Eurasian collared dove (*Streptotelia decaocto*) in Turkey while a few studies were done on the chewing lice of rock pigeon (*Columba livia*) in Turkey (14, 15, 18, 19). *Columbicola bacillus* has been recorded on *Streptopelia decaocto* worldwide (32-36). Clayton and Price (34) reported that *C. bacillus* is very similar to *C. columbae*, but differs from that species in having some measurements that are smaller, fewer setae (7-12) on the sub-genital plate in females and differences in some details of the male genitalia. Adams et al. (32) stated that *C. bacillus* differs from *C. columbae* due to greater head index, narrower dorsal anterior plate (0,118-0,147 mm), and fewer setae on the sub-genital plate in females. In this study, only one female *C. bacillus* was collected from a *Eurasian collared dove*. The width of the dorsal anterior plate was 0,147 mm, head index was 2.36, and ventral terminalia had 9 short setae aligned along the sides of the median pigmented area. These features are identical for *C. bacillus*.

## CONCLUSION

*Anatoecus icterodes*, *Afrimenopon waar*, *Columbicola bacillus*, and the genera *Anatoecus* and *Afrimenopon* were recorded for the first time in Turkey. Also for the first time, the marbled duck was discovered to be a host for *A. icterodes*.

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## Conflict of Interest

No conflict of interest was declared by the author.

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