



Journal of
Entomology

ISSN 1812-5670



Academic
Journals Inc.

www.academicjournals.com

**Records of the Genus *Aphaereta* Foerster (Hymenoptera: Braconidae)
from India, with Descriptions of Three New Species**

¹Ahmad Samiuddin, ²Zubair Ahmad and ²Mohammad Shamim

¹Department of Plant Protection, Faculty of Agricultural Sciences,
Aligarh Muslim University, Aligarh, India

²Department of Zoology, Aligarh Muslim University, Aligarh, India

Abstract: The genus *Aphaereta* Foerster is recorded for the first time from India and three species viz., *A. breviterebrata* sp. nov., *A. indica* sp. nov. and *A. minys* sp. nov. are described as new. A key to the Indian species is also given.

Key words: New record, *Aphaereta*, new species, *Aphaereta breviterebrata* sp. nov., *Aphaereta indica* sp. nov., *Aphaereta minys*

INTRODUCTION

Wharton (1977) in the revision of the New World species with the genus *Aphaereta* has given its detailed description. Subsequently, Wharton (1980) reviewed Nearctic Alysiini and recently Wharton (2002) discussed the generic relationship of *Aphaereta* with the other Alysiini genera on the basis of progressive loss of wing venation. He has placed *Aphaereta* close to *Asobara* and some species group within the *Phaenocarpa* with the series *Phaenocarpa-Asobara-Aphaereta*.

In all 36 species have been described under the genus *Aphaereta* from the world (Shenefelt, 1974; Wharton, 1977, 2002) out of which only two species are described from Indo-Australian region. In the present study the genus *Aphaereta* is recorded for the first time from India and three new species viz., *Aphaereta breviterebrata*, *A. indica* and *A. minys*. are described. The diagnostic characters for all species have been provided. A key for the identification of Indian species is also proposed.

MATERIALS AND METHODS

The material was collected from various regions in India by using sweeping nets. Scanning electron microphotographs of taxonomically important body parts were taken with the help of SEM (LEO 435 VP). Photographs of body parts on slide were taken with the help of a digital camera attached to a Trinocular Research Microscope (Olympus, BX-60). Measurements were taken with the help of ocular micrometer fitted in one of the two eye-pieces of the binocular microscope.

The terminology for the various parts and wing venation is after Sharkey and Wharton (1997) while Eady (1968) has been followed for description of surface-sculpture. The following abbreviations are used in the text: AOL = Anterior ocellar line (distance between the inner edges of anterior and lateral ocelli), POL = Posterior ocellar line (distance between the inner edges of lateral ocelli), OOL = Ocellular line (distance from the outer edge of a lateral ocellus to the compound eye), ØOD = Ocellus diameter, F = Flagellomere; ZDAMU = Insect collection, Zoology Department, Aligarh Muslim University.

Corresponding Author: Dr. Ahmad Samiuddin, Department of Plant Protection,
Faculty of Agricultural Sciences, Aligarh Muslim University, Aligarh, India
Tel: +91-9719232852, +91-9837345880, +91-9259416425

KEY TO THE INDIAN SPECIES OF THE GENUS *APHAERETA* FOERSTER

- Eyes moderately large, almost $2.5\times$ longer than temple in dorsal view. Notauli confined to anterior margin of disc. Fore wing second sub marginal cell strongly narrowed apically.....2
- Eyes large, $4.25\times$ longer than temple in dorsal view. Notauli visible up to half of the disc. Fore wing second sub marginal cell slightly narrowed apically, almost rectangular*Aphaereta indica* sp. nov.
- Propodeum with 5-sided areola. Fore wing vein r $0.25\times$ as long as stigma width; vein m-cu $1.8\times$ longer than 2 RS. Ovipositor sheath with about 14 long setae arranged on either side.....*Aphaereta minys* sp. nov.
- Propodeum with 3-sided areola. Fore wing vein r $1.6\times$ as long as stigma width; vein m-cu $2.8\times$ longer than 2 RS. Ovipositor sheath with about 4 long setae arranged on either side.....*Aphaereta breviterebrata* sp. nov.

Aphaereta breviterebrata Samiuddin and Ahmad, sp. nov.

Female

Body length, 1.3 mm (Fig. 1-4).

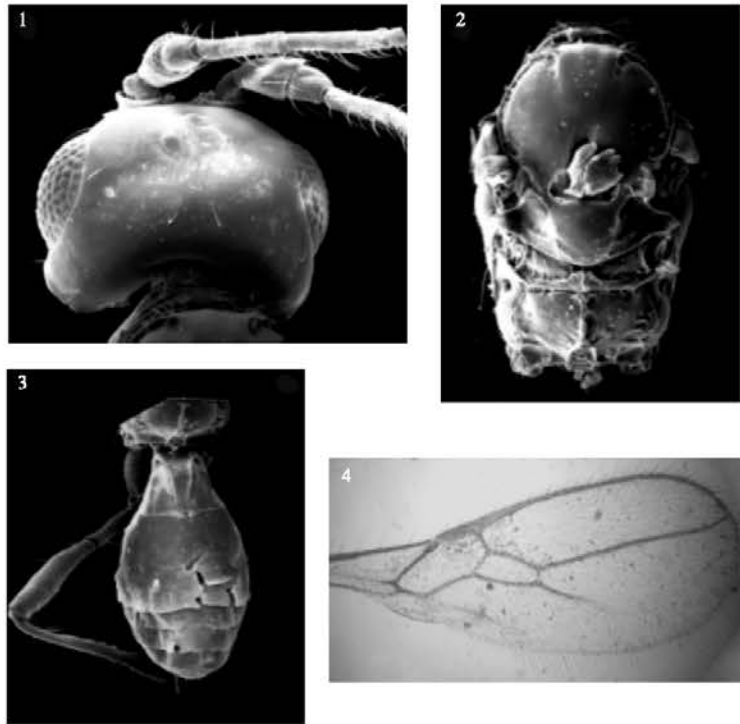


Fig. 1-4: *Aphaereta breviterebrata* sp. nov.

1. Head, dorsal view
2. Mesosoma, dorsal view
3. Propodeum and Metasoma, dorsal view
4. Forewing

Head

Transverse, dorsally 1.2× as wide as mesosoma (15.5:13), 1.7× wider than long (15.5:9); eye moderately large, without setae, in lateral view 3.6× longer than temple width (6.5:1.8), in dorsal view bulging, 2.2× longer than temple (6.5:2.9). Face, somewhat bulging laterally, smooth and polished. Frons, vertex smooth and polished. Mandibles tridentate, tooth 3 and 2 sub equally long, 3 more pointed than 2, as wide at base as 1, 1 slightly shorter than 3, 2 more wider at base than 1 and 3. Antennae 19-segmented (range 18-19 segmented), 1.9× longer than body (102:54), F1 0.8× as long as F2 (6.5:8), as long as F3 (6.5:6.5) (range 6-6.5:6-6.5); setae longer than flagellomere width with a more longer setae on almost each segments.

Mesosoma

Mesoscutum almost bare, smooth and shiny, with 1-2 setae scattered along notauli and 1-2 adjacent midpit; notauli short, confined to transverse marginal carina at edge of anterior declivity; midpit somewhat large, deep, rounded to oval in shape. Scutellum bulging. Sternaulus crenulate throughout, extinct before mid-coxa. Propodeum with mid longitudinal carina on basal half, bifurcating to form an areola on posterior half, otherwise smooth and shiny. The rest of the mesosoma smooth and polished.

Wings

Forewing M+CU visible apically, faint basally; stigma linear, r 1.6× longer than stigma width (3:1.9); m-cu 2.8× longer than 2RS (8.5:3); 3RSa 2.7× longer than 2RS (8:3); second sub marginal cell strongly narrowed apically; 2RS 2.4× longer than r-m (3:1.25).

Metasoma

Petiole smooth and polished, 0.9-1.3× as long as its apical width (8:7.5) (range 6-8:6.5-7.5); apex 1.7× wider than base (7.5:4.5); basal carina visible almost until apical margin, converged and meeting each other. Ovipositor concealed in sheath, short, 0.5× as long as petiole (4:8), ovipositor sheath with about 4-4 long setae arranged on either side.

Colour

Body largely dark brown; scape, pedicel and sometime F1 basally, face, T2, mesosoma, petiole and legs yellowish; head, apical half of metasoma, ovipositor sheath brown to dark brown; wings weakly infusate.

Male

Similar to female but differs for having antennae 20 segmented and propodeal areola 3 sided.

Type Material

Holotype: ♀, INDIA: Uttar Pradesh, Aligarh, 21.x.1999, Coll. Ahmad Samiuddin. *Paratypes*: 2♀♀, 1♂, with the same data as holotype.

Remarks

The new species, *Aphaereta breviterebrata*, closely resembles with the Nearctic species *Aphaereta masoni* McComb but differs in having: mesosoma yellowish (mesosoma blackish in *A. masoni*), petiole smooth, polished (petiole longitudinally rugulose, striate in *A. masoni*), propodeum smooth, polished with mid longitudinal carina on basal half and an 3 sided areola on posterior half (propodeum rugose in *A. masoni*).

Etymology

The name of the species refers to its short ovipositor.

***Aphaereta indica* Samiuddin and Ahmad, sp. nov.**

Female

Body length, 1.6 mm (Fig. 5-9).

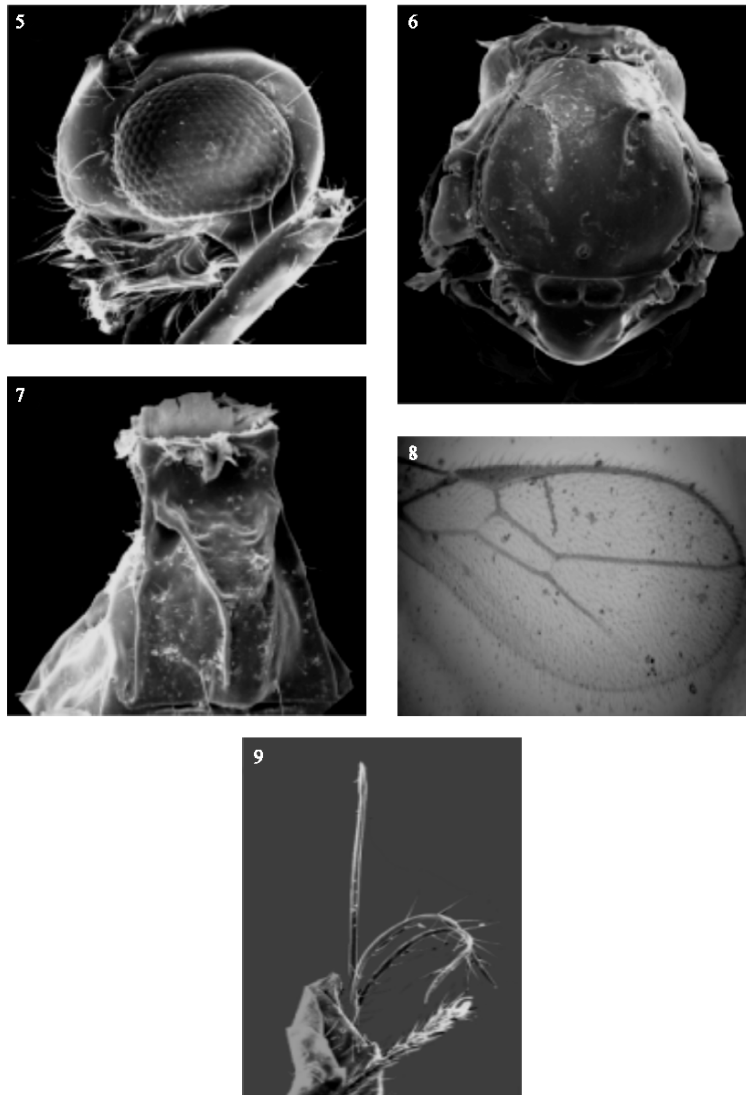


Fig. 5-9: *Aphaereta indica* sp. nov.

- 5. Head, lateral view
- 6. Mesoscutum
- 7. Petiole, dorsal view
- 8. Forewing
- 9. Ovipositor and ovipositor sheaths

Head

Dorsally 1.4× as wide as mesosoma (17:12). Eye large, in lateral view 4.25× longer than temple width (8.5:2), in dorsal view 4.25× longer than temple (8.5:2), with few (3-4) very short setae. Face, frons, vertex, smooth and polished. Mandible 2.8× longer than its apical width (8.5:3) with tooth 1 and 3 extending equally distad from base; tooth 2 narrow and acute apically. Antenna 21-segmented (range 20-21 segmented), 1.9× longer than body (123:64.5), F1 0.7× as long as F2 (6.5:9.5), 0.9× as long as F3 (6.5:7.5), setae longer than flagellomere width.

Mesosoma

Mesoscutum nearly bare, smooth and polished, with few setae scattered along anterior declivity, 2-3 along notauli and 2-3 adjacent midpit; notauli finely crenulate anteriorly, visible until half of disc and smooth; mid pit deep and oval. Sternaulus crenulate, extinct before mid-coxa. Propodeum smooth, polished with median longitudinal carina on basal half, bifurcating to form a 5-sided areola on posterior half.

Wing

Fore wing M+CU pigmented apically; pterostigma slightly wedge shaped to linear; r 0.8× as long as stigma width (2.5:3.25); m-cu twice longer than 2RS (9:4.5); 3RSa 2.6× longer than 2RS (11.5:4.5); second sub marginal cell slightly narrowed distally, almost rectangular; 2RS 1.8× longer than r-m (4.5:2.5). Hind wing with cu-a absent, combined M+CU and 1 M very weakly pigmented overall, RS and 2 M indistinct.

Metasoma

Petiole smooth and polished, 0.9× as long as its apical width (9:10), apex twice wider than base (10:5), basal carina visible until apical margin and converging at apex. Ovipositor about 1.3× longer than mesosoma (33:25), 1.2× longer than hind tibia (33:26.5), sheaths with 18 long setae arranged on either side.

Colour

Body largely brown to yellowish brown; scape, pedicel, palpi, coxae, trochanter, trochantellus and mandible yellowish; apical 5 flagellomeres of antennae whitish yellow; head dark brown; wing infusate, venation light brown.

Male

Unknown.

Type Material

Holotype: ♀, INDIA: Uttar Pradesh, Azamgarh, 03.iv.2000, Coll. Ahmad Samiuddin. *Paratypes*: 1 ♀ with same data as holotype; 1 ♀, INDIA: Uttar Pradesh, Azamgarh, 11.iii.2001, Coll. Ahmad Samiuddin; 1 ♀, INDIA: Uttar Pradesh, Aligarh, 16.x.1999, Coll. Ahmad Samiuddin.

Remarks

The new species, *Aphaereta indica*, closely resembles with *Aphaereta minys* sp. nov. but can easily be differentiated for having: vein r 0.8× as long as the width of pterostigma (vein r 0.25× as long as the width of pterostigma in *A. minys*), head in dorsal view about 1.4× as wide as mesosoma (head in dorsal view about 1.7× as wide as mesosoma in *A. minys*), antennae 21 segmented (antennae 18 segmented in *minys*), head, mesosoma dark brown to brown (head, mesosoma yellowish except vertex in *A. minys*).

Etymology

The specific name is derived from the name of the country of origin of the species.

***Aphaereta minys*, Samiuddin and Ahmad, sp. nov.**

Female

Body length, 1.1 mm (Fig. 10).

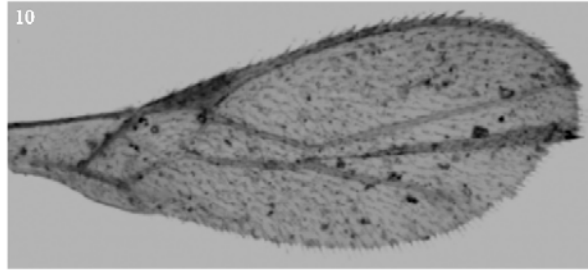


Fig. 10: *Aphaereta minys* sp. nov.

10. Forewing

Head

Dorsally 1.7× as wide as mesosoma (14:8). Eye moderately large, without setae in lateral view 2.5× longer than temple width (6:2.5), in dorsal view 2.5× longer than temple (5.5:2.25). Frons, vertex, smooth polished. Mandibles 2.2× longer than its apical width (6.5:3) with tooth 1 and 3 about equally well developed, sub equally long, their apex about as wide as base, tooth 3 acute. Antenna 18 segmented, 1.9 × longer than body (85:44), F1 0.8× as long as F2 (4.5:5.5) almost as long as F3 (4.5:4.8), setae longer than the flagellomere width.

Mesosoma

Mesoscutum almost bare with 1 to 3 setae scattered along notauli; notauli short, confined to anterior margin; midpit small, deep, rounded. Propodeum smooth, polished with median longitudinal carina on basal half, bifurcating to form five-sided areola on posterior half.

Wing

Forewing M+CU pigmented apically; stigma wedge shaped to linear; r very short, about 0.25× as long as pterostigma width (0.5:2); m-cu 1.8× longer than 2RS (5.5:3); 3RSa 3.2× longer than 2RS (9.5:3); second submarginal cell strongly narrowed apically; 2RS twice longer than r-m (3:1.5). Hind wing with cu-a absent; M+CU+1 M weakly pigmented basally; RS and 2 M indistinct.

Metasoma

Petiole smooth and polished, 0.9× as long as its apical width (4:4.5), apex 1.8× wider than base (4.5:2.5), basal carina visible until apical margin and parallel sided. Ovipositor 1.2 × longer than hind tibia (21:17.5), ovipositor sheath with about 14 long setae arranged on either side.

Colour

Body yellowish brown; legs, apical 4/5th flagellomeres, scape and pedicel yellowish; head honey yellow except vertex which is brownish.

Male

Unknown.

Type Material

Holotype: ♀, INDIA: Uttar Pradesh, Aligarh, 21.x.1999, Coll. Ahmad Samiuddin.

Remarks

The new species *Aphaereta minys* sp. nov. closely resembles with *Aphaereta pallidinotum* Wharton but differs in having: eye in lateral view 2.5× longer than temple width (eye in lateral view 4.5×-5.7× longer than temple width in *A. pallidinotum*), fore wing M+CU pigmented apically (fore wing M+CU pigmented throughout in *A. pallidinotum*), stigma wedge shaped to linear (stigma nearly linear in *A. pallidinotum*), basal carina parallel at apex (basal carina converging at apex in *A. pallidinotum*).

This is a quite distinctive species and can easily be separated from all other described species of *Aphaereta* by the following combination of characters. Body 1.1 mm in length; mesonotum, petiole, mesosoma, head (except vertex) yellowish; proportion of the width of head and thorax (14:8); vein r very short about 0.25× as long as pterostigma width; ovipositor 1.2× as long as hind tibia and about as long as metasoma.

Etymology

The specific name refers to the very small size of the species.

ACKNOWLEDGMENTS

We thank Dr. M. Hayat and Dr. Shujauddin for reviewing the manuscript and offering useful suggestions. Authors are also thankful to Chairman, Department of Zoology for laboratory facilities.

REFERENCES

- Eady, R.D., 1968. Some illustrations of microsculpture in the Hymenoptera. *Proc. R. Ent. Soc. Lond.*, A., 43 (4-6): 66-72.
- Sharkey, M.J. and R.A. Wharton, 1997. Morphology and Terminology. In: *Manual of the New World Genera of the Family Braconidae (Hymenoptera)*, Wharton, R.A., P.M. Marsh and M.J. Sharkey (Eds.). The International Society of Hymenopterists: Washington DC., pp: 19-37.
- Shenefelt, R.D., 1974. Braconidae 7. Alysiinae. In: *Hymenopterorum Catalogus*, Van der Vecht, J. and R.D. Shenefelt (Eds.). Part 11, Dr. W. Junk: The Hague, pp: 937-1113.
- Wharton, R.A., 1977. New World *Aphaereta* species (Hymenoptera: Braconidae: Alysiinae), with a discussion of terminology used in the Tribe Alysiini. *Ann. Ent. Soc. Am.*, Washington DC., 70 (5): 782-803.
- Wharton, R.A., 1980. Review of the Nearctic Alysiini (Hymenoptera, Braconidae) with discussion of generic relationships within the tribe. *Univ. California Publ. Entomol.*, 88: 1-112.
- Wharton, R.A., 2002. Revision of the Australian Alysiini (Hymenoptera: Braconidae). *Invertebr. Syst.*, 16: 7-105.