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A new species *Abgrallaspis polyalthiae* (Homoptera: Coccoidea: Diaspididae) collected from Raja Balwant Singh College, Agra, U.P. (India)

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Abstract
Agrallaspis polyalthiae (n.sp.) collected from leaves of ashoka tree *Polyalthia longifolia* from Raja Balwant Singh College, Agra. It is described as new species of armoured scale insect (Homoptera: Diaspididae). Its distribution is mainly in northern India known to cause underneath scale of chlorotic effect on leaves. Its host perennial tree has economic significant in the world.

Keywords: *Abgrallaspis polyalthiae*, taxonomic status

Introduction
Balachowsky (1948, 1953, 1956 and 1959) [1-4] created the genus *Abgrallaspis* and transferred 12 species to this genus. De Lotto (1957) [9], Davidson (1964) [8] and Borchsenius (1965) [5] each described one new species. Davidson also presented a key of 13 North American species of *Abgrallaspis*. Borechsenius included in *Abgrallaspis* Balachowsky 11 more species. The features of the genus *Abgrallaspis* Balachowsky were closely related to genera *Aspidiella* Leonardi, *Borchseniaspis* Zahradnik, *Diaspidiotus*, Leonardi, *Ephedraspis Borchsenius* and *Hemiberlesia* Cockerell were described by Komosinska (1969) [10]. Furthermore in his revisionary studies in the same paper he assigned 17 species to this genus *Abgralluspis*. Takagi (1969) [16], Williams (1976), Das (1976, 1978) [6-7], Miller and Howard (1981) [12], Martin-Mateo (1983) [11] each added one more species i. e. *A. momicola, A. pictor, A. liriodendri* and *A. caricis* respectively to this genus. Dutta and Singh (Dutta and R.V.S. Ojha, 1990), Ojha *et al*. (2004) [15], Ojha (2005, 2006) [13-14] described each one new species of *Abgrallaspis*.

Material and Methods
The collection of the material of *Abgrallaspis polyalthiae* (n.sp.) was done from its host on ventral surface of the leaves with the aids of horticulture budding knife. The material included the females along with their scales. The specimens were preserved in dry condition and author adopted the procedure used for mounting the scale insects by Williams and Kosztarab (1970) [18]. Figures and photomicrography of the mounted specimens were done with the aid of camera lucida. Measurements were taken with the aid of occulometer and micrometer.

Description of *Abgrallaspis polyalthiae* (n.sp.)
Scale of female
(Fig.1): Circular white with yellowish colour, flat with two subcentral exuviae, its length 1.64mm and width 1.28mm.

Body of female
(Fig. 2 & 3) Body ovoidal, greenish yellow, dorso-ventrally flattened, anterior end rounded, broader in middle and gradually narrowing towards posterior end its length 1.36mm and width across the mesothoracic 1.06mm.

Segmentation of the body
(Fig. 2 & 3): The body of the adult female *Abgrallaspis polyalthiae* (n.sp.) is divided into prosoma, postsoma and pygidium. The prosoma is formed by the fusion of head, pro and mesothoracic segments; postsoma by the metathorax and three anterior abdominal segments, and the pygidium by 4th to 8th abdominal segments.

Prosoma
Ventrally bearing a pair of antennae; each antenna short, minute, rectangular basal scape and a needle-like flagellum, its length and width 0.0066mm and 0.0052mm; mouth parts piercing and sucking type, with labium one segmented and stylet loops not bending at the tip; a pair of prosomal spiracles, each associated with one oval-shaped trilocular pore, the length and width of each spiracle 0.0354mm and 0.0212mm; a pair of much reduced and not clearly detectable eyes.

Postsoma
Ventrally metathoracic segment with a pair of spiracles without trilocular pores which are similar in morphology but smaller in size to the prosomal spiracles, length and width of each spiracle 0.0238mm and 0.0132mm; with 2 mesoducts on each lateral side dorsally and numerous microglandtubercles ventrally. Each dorsal side of first abdominal segment with 2 mesoducts, second 3 meso and 6 macroducts, and third with 2 meso and 6 macroducts. Ventrally all abdominal segments with numerous micro and macroglandtubercles, and macroducts.

Pygidium
(Fig.4): Consisting of following distinguishable characters: lobes three pairs (L_1, L_2 and L_3). L_1 largest well developed and sclerotized with long marginal apophysis its distal end with two notches, inner and outer both of equal size, apex of L_1 rounded. L_1 is longer than its width, its length 0.0146mm and width 0.0106mm; the distance between both L_1 lobes always less than the width of L_1. L_2 lobe smaller than L_1 with a narrow notch on outer margin and rounded at the apex, its length and width 0.0108mm and 0.0092mm. L_3 lobe very smaller than L_2, sclerotized and pointed at the apex its length 0.0092mm and 0.0074 mm.

Glandular plates
Between both L_1 lobes 2 plates developed, branched and fringed, as long as L_1. Between L_1 and L_2 lobes 2 plates well developed, branched, fringed, as long as L_1. Anterior to L_3 there are 3 external plates as long as other plates. They are narrow, spiniform, inner two of them fimbriate outer margin and set on the widening bases; but outer one has not on widening base and pointed at the top.

Apophyses and Sclerotizations
Dorsally anal apophysis present which is attached to the anal opening and inner margin of the L_1 lobe. Two flat irregular sclerotizations present on each dorsal side-one anteromedian and other anterosubmedian position. Ventrally a distinct perivulvar apophysis present, connecting both anterior and posterior groups of perivulvar pores; ventral sclerotization present equal to anterior level of the anal opening to the margin of the pygidium near L_1 and L_2 lobes.

Paraphyses
Slightly developed, swollen anteriorly present between segments VIII and VII, VII and VI, and L_1 with small paraphyses at the bases of the inner sides.

Pygidial Ducts
Two types: micro and macroducts. Equal 6 microducts on each ventral side in the marginal area, each microduct filiform, long with distinct independent rounded opening and 0.0416 mm length. The 13 macroducts of equal size present on each dorsal side in the marginal and submarginal area. The marginal area macroducts open by marginal macropores in the following manner: 1 between L_1, 1 between L_1 and L_2, 2 between L_2 and L_3 and 2 above the L_3 lobe. Each pygidial duct nearly three times longer than L_1 lobe. The length and radius of each macroduct 0.0728mm and 0.0022mm.

Perivulvar Pores
Present in four groups on the ventral side of the pygidium. 4 pores in each anterior and posterior group. The radius of each perivulvar pore is 0.00275 mm.

Anus and Vulva
The anal opening longitudinally oval shaped located on the antero-posterior median axis on the dorsal side with longitudinal and transverse radius ratio five and three, and measurements of these radii 0.0090 mm and 0.0054 mm. The transverse radius of the anus is less than the half width of the L_1 lobe.

Setae
On each dorsal side prosoma with 3 marginal, 4 submarginal and 3 median; postsoma with 2 marginal, 3 submarginal and 4 median; and pygidium with 4 marginal setae only. On each ventral side prosoma with 4 marginal, 4 submarginal and 5 median setae; postsoma with 4 marginal, 3 submarginal and 4 median setae; and pygidium with 3 marginal, 3submarginal and 4 median setae.

Host
(Fig.5): *Abgrallaspis polyalthiae* (n.sp.) collected from tree *Polyalthia longifolia*.

Fig 1: Microphotograph of the scale of female *Abgrallaspis polyalthiae* (*n. sp.*)

Fig 2: Microphotograph of the female *Abgrallaspis polyalthiae* (n. sp.)

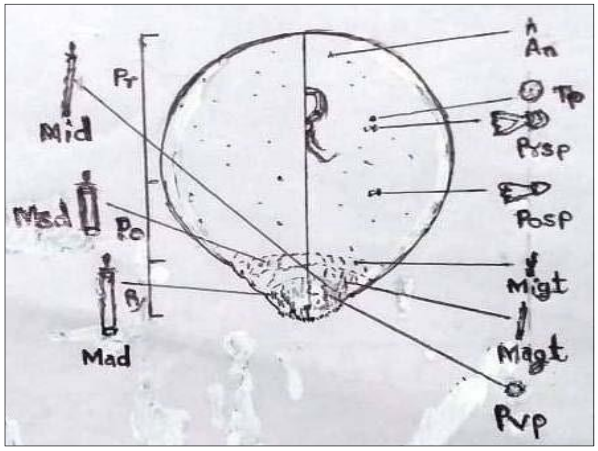

Fig 3: Photograph of a. camera lucida diagram showing dorsal and ventral sides of female *Abgrallaspis polyalthiae* (n. sp.)

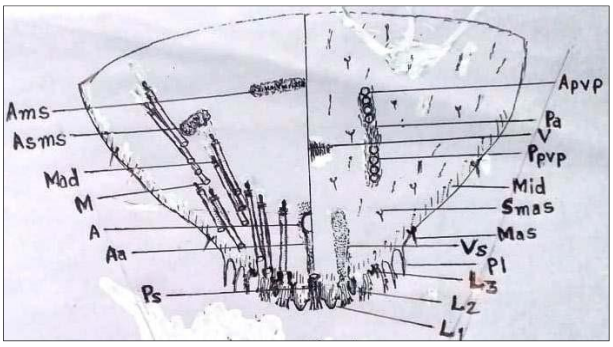

Fig 4: Photograph of a camera lucida diagram showing dorsal and ventral sides of pygidium of female *Abgrallaspis polyalthiae* (n.sp.)

Fig 4: Photograph of the leaves of *Polyalthia longifolia* infested withfemale Abgrallaspis polyalthiae (n.sp.)

Abbreviations

A, Anal opening; Aa. Anal apophysis; Ama, Anterior median apophysis; Ams, Antero-median sclerotization; An, Antenna; Apvp, Anterior perivulvar pore; Asms, Antero-submedian sclerotization; Fig, Figure; L_1, L_2, L_3 Lobes; M, Macropore; Mad, Macroduct; Magt, Macroglandtubercle; Mas, Marginal seta; Mid, Microduct; Migt, Microglandtubercle; Ms, Median seta; Msd, Mesoduct; n.sp., new species; P. Paraphysis; Pa, Perivulvar apophysis; Po, Postsoma; Posp, Postsomal spiracle; Ppvp, Posterior perivulvar pore; Pr, Prosoma; Prsp, Prosomal spiracle; Ps, Pygidial seta; Pvp, Perivulvar pore; Py, Pygidium; Smas, Submarginal seta; Tp, Trilocular pore; V, Vulva; Vs, Ventral sclerotization.

Results and Discussion

Komosinska (1969) [10] described L_1 lobes narrowly notched on both sides, rounded on the top; L_2 shorter than L_1, notched on the outer side, with narrow blunt apex, similar in shape to L_1; perivulvar pores in four groups in *A. degeneratus, A. gliwicensis, A. latastei, A. narainus* (Dutta and Singh, 1991) that of *A. polyalthiae* (n.sp.). But *A. polyalthiae* (n.sp.) may be separated from *A. degeneratus* (Komosinska, 1969) [10] in having one macroduct opening in beween L_1 lobes like that of *A.latastei* (Komosinska, 1969) [10] but in *A. latastei* in between L_1 and L_2 lobes there are many macroducts and perivulvar pores 18-21 in the pygidium, while in *A. polyalthiae* (n.sp.), *A. degeneratus* and *A. latastei* (Komosinska, 1969) [10] the three pairs of external plates of the pygidium are altogether different. Furthermore, the paraphyses of *A. polyalthiae* (n.sp.) are similar to that of *A. fraxini* (Komosinska, 1969) [10] but the latter species is quite different to the former in having quite distinct L_3 lobes, the five groups of perivulvar pores, and many macroducts present between L_1 and L_2 lobes.

References

1. Balachowsky AS. Les cochenilles de France, d' Europe du Nord, de I' Afrique et du Bassin Mediterrancen IV; Paris, 1948.
2. Balachowsky AS. Sur un *Hemiberlesia* Cockerell nouveau des montagnes du Cameroun (Homoptera; Coccoidea). Beitr. Ent. Berlin. 1953;3:111-115.
3. Balachowsky AS. Les cochenilles du continent Africain Noir. Vol. I, *Aspidiotini*. Ann. Mus. Congo Belg., n. s., 4^0, Sci. Zool., Tervuren. 1956;3:1-142.
4. Balachowsky AS. Sur un nouvel *Aspidiotini* (Coccoidea) de I' Iran. Rev. Pathol. Veg. Ent. Agr. France, Paris. 1959;38:211-213.
5. Borchsenius NS. Osnovy klasifikacii scitovok (Homoptera: Coccoidea: Diaspididae). Ent. Obozr., Moskva-Leningrad. 1965;44:362-376.
6. Das SC. Survey of scale insects in Darjeeling, Two and Bud. 1976;23(1):12-19.
7. Das SC. Cataloguing coccoids. Two and Bud. 1978;25(1):43-44.
8. Davidson JA. The genus *Abgrallaspis* in North America (Homoptera: Diaspididae). Ann. Ent. Soc. Amer., Baltimore, Maryland. 1964;57:638-643.
9. De Lotto G. New Aspidiotini (Homoptera: Coccoidea: Diaspididae) from Kenya. Ann. Mag. Nat. Hist. London. 1957;10:225-231.
10. Komosinska H. Studies on the genus *Abgrallaspis* Balachowsky, 1948 (Homoptera: Coccoidea: Diaspididae). Acta. Zoologica Cracoviensia. 1969;14(3):43-85.
11. Martin Mateo MP. Inventario preliminar de los coccidos de Espana *Graellsia*. 1983;39:47-71.
12. Miller Douglass R, Howard FW. A new species of *Abgrallapsis* (Homoptera: Coccoidea: Diaspididae) from Louisiana. Ent. Soc. Amer. Ann. 1981;74(2):164-166.
13. Ojha RVS. A new species of *Abgrallaspis ozadirachti* (Homoptera: Coccoidea: Diaspididae) collected from Kudhi, Shikohabad. Flora and Fauna. 2005;11(1):11-14.
14. Ojha RVS. New species *Abgrallaspis nahari* (Homoptera: Coccoidea: Diaspididae) collectecd from Botanical garden of Narain College, Shikohabad, Firozabad (INDIA). J Env. Res. Develop. 2006;1(2):155-158.
15. Ojha RVS, Singh K, Dutta S. Description of new species

Abgrallaspis katorii (Homoptera: Coccoidea: Diaspididae) collected from Shikohabad (U.P.). Nat. J Life Sciences. 2004;1(2):417-420.
16. Takagi S. Diaspididae of Taiwan based on material collected in connection with the Japan-U.S. Cooperative science programme, 1965 (Homoptera: Coccoidea). Part 1. Insecta Matsumurana. 1969;32:1-110.
17. Williams DJ. A new species of *Abgrallaspis* Balachowsky (Homoptera: Coccoidea: Diaspididae) from a nursery in England causing leaf-spotting on orchids. Bull. Ent. Res. 1971;60:453-455.
18. Williams LM, Kosztarab M. A morphological and systematics study on the first instar nymphs of the genus *Lecanodiaspis* (Homoptera: Coccoidea: Lecanodiaspididae). Va. Polytech. Institute and State Univ. Res. Div. Bull. 1970;52:1-96.