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GRASSFLIES OF THE TRIBE ELACHIPTERINI (DIPTERA: CHLOROPIDAE) FROM VIETNAM AND THAILAND, WITH DESCRIPTION OF A NEW SPECIES

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The genera *Anatrichus* LOEW, *Myrmecosepsis* KERTÉSZ, *Sepsidoscinis* HENDEL and *Disciphus* BECKER (tribe Elachipterini) from Vietnam and Thailand are reviewed. A new species *Disciphus humeralis* sp. n. is described from Thailand. The puparium of *Anatrichus pygmaeus* LAMB is first described.

Key words: Diptera, Chloropidae, tribe Elachipterini, Oriental region, Vietnam, Thailand, new species, puparium

INTRODUCTION

The tribe Elachipterini includes the following genera *Elachiptera* MACQUART, *Cyrtomomyia* BECKER, *Anatrichus* LOEW, *Disciphus* BECKER, *Myrmecosepsis* KERTÉSZ, *Sepsidoscinis* HENDEL, *Togeciphus* NISHIJIMA, *Ceratobarys* COQUILLETT and *Melanochaeta* BEZZI (NARTSHUK 1983). ANDERSSON (1977) considered most of these genera plus *Cadrema* as belonging to the *Elachiptera* genus group. *Togeciphus* was recorded only from Japan. The species of *Elachiptera* have not been recorded from Vietnam and Thailand, although they were recorded from India (CHERIAN 1975). Relationship of the genus *Melanochaeta* has not been clarified and it is better to consider this genus as excluded from the tribe Elachipterini. *Ceratobarys* is recorded only from North America. In this paper the genera *Anatrichus*, *Myrmecosepsis*, *Sepsidoscinis* and *Disciphus* are discussed.

KANMIYA (1983) excluded the genera *Myrmecosepsis* and *Sepsidoscinis* from the *Elachiptera* genus group and created the *Myrmecosepsis* genus group with two genera, *Myrmecosepsis* and *Sepsidoscinis*. He considered these two genera are not related to *Elachiptera* and other genera of the tribe. He is inclined to believe that such characters as spiny setae on scutum and scutellum and sclerotized and fused abdominal tergites are as convergent similarities between *Anatrichus* and *Togeciphus* from one side, and *Myrmecosepsis* and *Sepsidoscinis* from the other. KANMIYA did not find the costal break near the tip of R_1 in wing in *Myrmecosepsis* and *Sepsidoscinis*. This problem needs further investigation, and I have retained these two genera within the tribe Elachipterini up to now.

MATERIAL

The paper is based on material collected by author and other entomologists of the Zoological Institute, Russian Academy of Sciences, St. Petersburg, in Vietnam, and material from Thailand, collected by "Thailand Inventory Group for Entomological Research (TIGER) project" and a specimen, collected by N. VIKHREV. A half of the specimens from Thailand are deposited in the Entomology section of QSBG (Queen Sirikit Botanical Garden), P.O. Box 7, Mae Rim Chiang Mai 50180, Thailand, and the other half in the Zoological Institute of the Russian Academy of Sciences in S. Petersburg, Russia. All specimens from Thailand, except a specimen collected by N. VIKHREV, which is from collection of the Zoological Museum of the Moscow University, are in alcohol.

LIST OF SPECIES

Anatrichus pygmaeus LAMB, 1918

LAMB, 1918: 348, type locality Peradeniya, Ceylon (Sri Lanka), as var. of *A. erinaceus* LOEW. BECKER 1911: 116 – Taiwan, as *A. erinaceus*. BECKER & DE MEIJERE 1913: 302 – Java, as *A. erinaceus*. FREY 1923: 101 – Philippine (Luzon), as *A. erinaceus.* BECKER 1924: 124 – Taiwan, as *A. erinaceus*. MALLOCH 1927: 581 – India, from *Panicum stagninum*. DUDA 1930: 280, 298 – Taiwan, Sri Lanka, as *A. erinaceus*. DUDA 1934: 84 – Sumatra, as *A. erinaceus*. NISHIJIMA 1955: 52 – Taiwan, Japan (Amami Oshima). NARTSHUK 1962: 674 – China (Kwangtung), as *A. erinaceus*. SABROSKY 1962: 560 – Oriental Region. YASUTATSU 1967: 37 – South-Eastern Asia. NARTSHUK 1972 : 341 – eastern Afghanistan. SABROSKY 1977: 278 – many countries in South-Eastern Asia, including Thailand. KANMIYA 1983: 79 – Japan (drawings of male genitalia). NARTSHUK 1991: 83 – Vietnam. YANG & YANG 1995: 541 – China (Baishanzu Mountains). YANG & YANG 1998: 562 – China, as *A. erinaceus*.

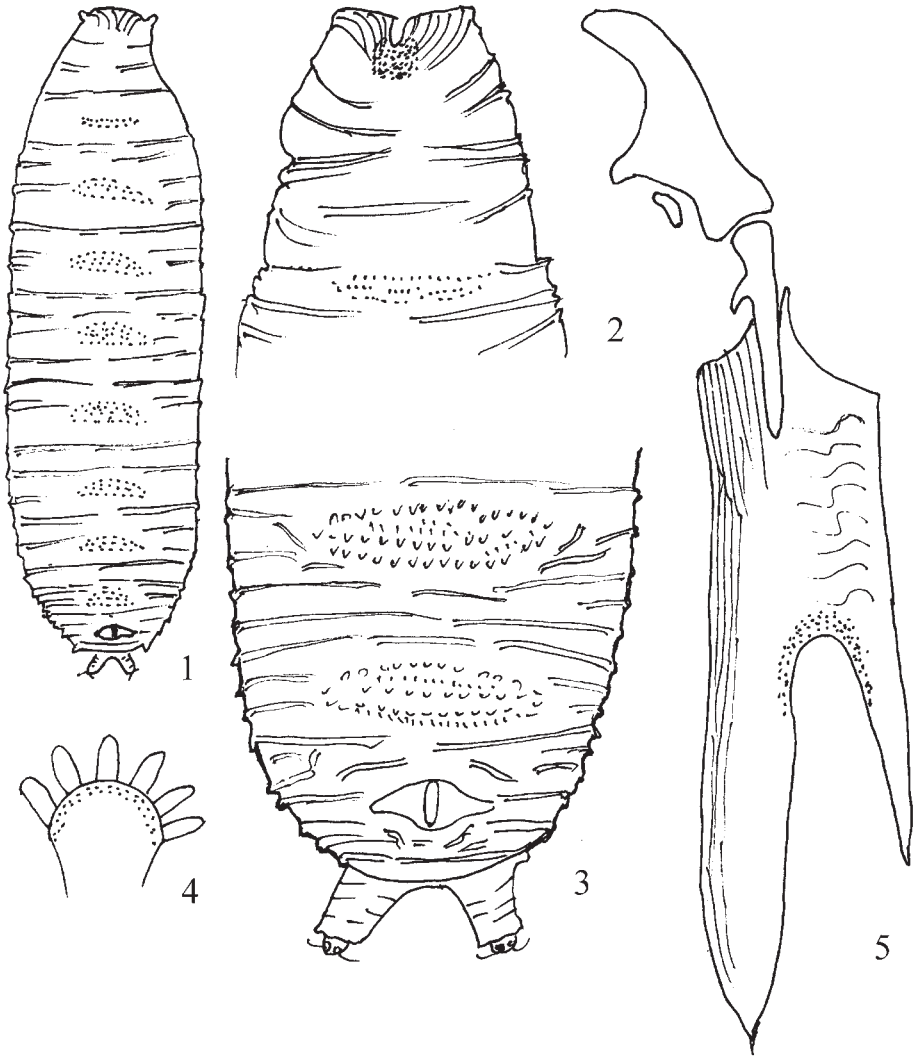
Synonyms: *Echinia bisigmenta* PARAMONOV, 1961: 98 – Australia. *erinaceus:* authors, not LOEW, 1860.

Material examined: Vietnam: Hanoi, Tyliem, 7, 15.03., and 4.04.1979, ex larvae of *Chilodea auricola* and *Chilo suppressilis* (Kuang Kon), 3 ♀, two with puparia (see below); Hanoi, 30.10.–4.11. (GOROKHOV), 1 ♀; Hanoi, on grasses, 31.12.1988, 13.02.1989 (SUGONJAEV), 1 ♂, 1 ♀; Hanoi, on rice field, 30.06, 15.07.1993 (SUGONJAEV), 7 ♂, 3 ♀; 30 km SE Hanoi, basin of Read River, 30.12.1988 (SUGONJAEV, KOROTJAEV), 4 ♂, 8 ♀; prov. Shonla, viz. Shomrma, 440–600 m, 3–14.05.1986 (GOROKHOV), 1 ♂, 2 ♀; Tkhankhoi, basin of River Ma, 27–30.01.1989 (SUGONJAEV), 3 ♂, 2 ♀; 125 km W Tkhankhoi, basin of River Ma, 27.01.1989 (SUGONJAEV), 2 ♂. Thailand: T317 Loei, Phu Ruea NP, office, 17°28.826'N 101°21.330'E, 860 m, 19.vii.2006–26.vii.2006, Malaise trap, Nukoonchai Jaroenchai, 1 ♀. T440 Chaiyaphum, Pa Hin Ngam NP, Ecotone between mix deciduous/dry dipterocarp, 15°38.100'N 101°23.857'E, 700 m, 5.viii.2006–11.viii.2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 1 ♂. T1040 Chaiyaphum, Pa Hin Ngam NP, Ecotone between mixed deciduous and dry dipterocarp forest, 15°34.913'N 101°25.658'E, 444 m, 28.xi. 2006–4.xii.2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 1 ♀.

Additional examined material: Taiwan: Ako, 11.07.1906 (MATSUMURA), 1 ♀ (specimen was received from Y. NISHIJIMA). Afghanistan: prov Nengrahar, Kama, 40 km N Jalalabad, 580 m, 24.03.1966 (POVOLNY, TENORA), 1 ♂.

Distribution. The species is recorded in Australia and widely distributed in the Oriental Region: eastern Afghanistan, Japan, China (Kwantung), Taiwan, Burma, Sri Lanka, India, Malaysia, Nepal, Indonesia, Philippines, Thailand, Vietnam, Bangladesh, Pakistan.

Biology. The species was reared from shoots of grasses *Echinochloa* (as *Panicum*) *stagnina* in Southern India and young rice plants in the Philippines and



Figs 1–5. *Anatrichus pygmaeus* LAMB, puparium. 1 = habitus, ventral view, 2 = anterior end of puparium, ventral view, 3 = posterior part of puparium, ventral view, 4 = anterior stigma, 5 = cephalopharyngeal skeleton

India. It has been reported as predator of *Ripersia oryzae* GREEN on paddy in India, of the larvae of the rice borer *Schoenobius incertulas* (WALKER) on Taiwan and parasitic on "Kody fly" in India (SABROSKY 1962). A part of specimens from Vietnam were reared from caterpillars of stem borer Lepidoptera: *Chilo polychrysus* (MEYRICK), *Ch. suppressalis* (WALKER) and *Chilodea* sp. Some authors considered the species as predator (WONGSIRI *et al*. 1974), but SABROSKY (1962) believed larvae of *A. pygmaeus* are scavengers and feed on dead caterpillars of stem borers.

Description of puparium (Figs 1–5). Larva and puparium of the species have been described formerly. I have two puparia from Vietnam. Puparium brownish, 2.3 mm long with two stigmophores on posterior end. Anterior stigma fan-type with 6 processes. Stigmophores large divergent. Posterior stigma with 4 branched hairs. Anal opening transverse. Seven creeping areas covered with spicules of different size on ventral side of puparium and one anterior from small spicules only. Cephalopharyngeal skeleton: mandible black without additional teeth on ventral surface and with dentate sclerite; parastomal sclerite black, narrow with process on ventral side; pharyngeal sclerite clear; ventral wing longer and wider than dorsal one, with many ridges on ventral side.

Myrmecosepsis taprobane ANDERSSON, 1977

ANDERSSON, 1977: 75, type locality Ceylon (Sri Lanka); drawing of adult, head, wing and female terminalia.

Material examined: Vietnam: Hanoi, meadow, 7–8.10.1990 (Belokobylski), 1 ♂, 3 ♀. Thailand: T1040 Chaiyaphum, Pa Hin Ngam NP, Ecotone between mixed deciduous and dry dipterocarp forest, 15°34.913'N 101°25.658'E, 444 m, 28.xi.2006–4.xii.2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 1 ♂, 1 ♀.

The species was described from Sri Lanka and this is the second record of the species in the literature and the first record for Thailand. In the collection of the National Museum of Wales, Dept. of Zoology, there are 5 ♂, 5 ♀ labelled "India, West Bengal, Chandra neswar, 1.x.1983, S.S. Islam" (JOHN DEEMING, pers. comm.).

Another species of the genus, *M. hystrix* KERTÉSZ, 1914, was described from Taiwan, but was not recorded after the first description.

Sepsidoscinis maculipennis HENDEL, 1914

HENDEL, 1914: 247 – Taiwan. FREY, 1923: 98 – Philippines. DUDA, 1934: 84 – Sumatra. ANDERSSON, 1977: 75, drawing of some structures, including male genitalia, 3 stripes on wing. NARTSHUK, 1991: 84 – Vietnam. YANG & YANG, 1998: 569 – China.

Material examined: Vietnam: pr. Ha Son, Binh Da Bac, Tuly, 18–23.10.1990 (NARTSHUK), 11 ♂, 8 ♀; pr. Vinh Phu, Tam Dao, 1000 m, forest, 1–16.11.1990 (NARTSHUK), 4 ♂, 4 ♀; pr. Hanoi, 70 km NW Hanoi, Ba Vi, 24.11.1990 (NARTSHUK), 1 ♀; Hanoi, 9–14.10 1990 (Belokobylski, NARTSHUK), 5 ♂, 2 ♀; pr. Ha Son, Binh Ky Son, Cao Phong, 29.10.1990 (NARTSHUK, GOROKHOV), 2 ♂, 2 ♀; pr. Mai Chou, Ha Son Binh, forest, 29. x–4.xi. 1990 (NARTSHUK), 2 ♂. All examined specimens have only two dark bands on wing, no apical band.

The species was described from Taiwan, and widely distributed in the Oriental Region: Sri Lanka, China (Fukien, Kwantung), Taiwan, Vietnam (Hainan Island), India (Maharashtra), Philippines (Luzon), Sumatra.

Disciphus BECKER, 1911

SABROSKY (1977) listed two species of the genus in the Oriental Region. He considered *D. flavitarsis* DUDA as a synonym of *D. peregrinus* BECKER. KANMIYA (1983) restored *D. flavitarsis* from synonymy, described a new species *D. subelongatus* KANMIYA from Japan (Kyushu), and gave a key from Japanese and Oriental species of the genus.

Three species of the genus are found in Thailand, including a new species, described here, and two in Vietnam. The most common species is *D. peregrinus* BECKER.

Disciphus flavitarsis DUDA, 1930

DUDA, 1930: 284 – Taiwan. NISHIJIMA, 1955: 53 – Japan (Amami-oshima Islands) (as *D. peregrinus*, according KANMIYA, 1983: 83). KANMIYA, 1983: 83 – Japan (Ehime Pref., Kagoshuma Pref., Yakushima Islands, Amami Islands, Okinawa Island, Taiwan), drawings of scutellum, male genitalia and femoral comb.

Material examined: Vietnam: pr. Ha Son Binh, La Bac, Tuly, 23.10.1990 (NARTSHUK), 1 ♀. Thailand: T 451 Chaiyaphum, Pa Hin Ngam NP, Dry dipterocarp, 15°38.099'N 101°23.921'E, 698 m, 24.viii.2006, 30.viii.2006, Malaise trap, Katae Sa-nog & Buakaw Adnafai, 1 ♂; T 534 Loei, Phu Ruea NP, Pan Hin Khan Maak ditch, 17°30.042'N 101°20.474'E, 1219 m, 26.viii. 2006–2.ix.2006, Malaise trap, Nukoonchai Jaroenchai, 1 ♀; T 831 Loei, Phu Ruea NP, Nature trail, 17°30.740'N 101°20.650'E, 1353 m, 19.ix.2006- 26.ix.2006, Malaise trap, Nukoonchai Jaroenchai, 1 ♀; T 808 Phetchabun, Khao Kho NP, Nursery, 16°52.581'N 101°08.060'E, 520 m, 12.x.2006–19.x.2006, Malaise trap, Somchai Chatchumnan and Sa-ink Singtong, 1 ♀.

Distribution. Japan (southern Islands), Taiwan. Species is now recorded in Vietnam and Thailand for the first time.

Disciphus peregrinus BECKER, 1911

BECKER, 1911: 98 – Type localities: Wonosobo (Java), Chip-Chip (Taiwan). BECKER, 1924: 193 – Taiwan. DUDA, 1934: 85 – Sumatra. YANG, YANG, 1996: 564 – China. SABROSKY, 1977: 285 – Taiwan, Java, Sumatra.

Material examined: Vietnam: pr. Ha Son Binh, Da Bach, Tuly, 16–23.10.1990 (NARTSHUK), 8 ♂, 7 ♀. pr. Vinh Phu, Tam Dao, 1000 m, forest, 11.11.1990 (NARTSHUK), 4 ♂, 4 ♀. pr. Ha Son Binh, Ky Son, Cao Phong, 29.10.1990 (SUGONJAEV), 1 ♀. Thailand: Rayong, Khao Chamao, 10.12.2007 (Vikhrev), 1 ♂. T52 Chiang Mai, Doi Inthanon NP, campground pond, 18°32.657'N 98°31.482'E, 1200 m, 1.vii.2006–8.vii.2006, Malaise trap, Y. AREELUCK, 1 ♂; T84 Nong Bua Lampoo, Phu Kao-Phu Phan Kham NP, far from the road, 100 m, 16°48.440'N 102°36.959'E, 20.vii.2006–26.vii.2006, Malaise traps, Rakkiat Singhatip, 1 ♀; T185 Chiang Mai, Doi Inthanon NP, summit forest, 18° 35.361'N 98°29.157'E, 2500 m, 16.viii.2006–24.viii.2006, Malaise trap, Y. AREELUCK, 1 ♀; T303 Loei, Phu Ruea NP office, 17°28.826'N 101°21.330'E, 860 m, 5.vii.2006–6.vii.2006, Pan Traps, Patikhom Tamtip, 1 ♂, 2 ♀; T 304 T304 Loei, Phu Ruea NP office, 17°28.826'N 101°21.330'E, 860 m, 6.vii.2006–7.vii.2006, Pan Traps, Patikhom Tamtip, 1 ♀. T305 Loei, Phu Ruea NP office, 17° 28.826'N 101°21.330'E, 860 m, 7.vii.2006–8.vii.2006, Pan Traps, Patikhom Tamtip, 2 ♂, 1 ♀; T306 Loei, Phu Ruea NP office, 17°28.826'N 101°21.330'E, 860 m, 8.vii.2006–9.vii.2006, Pan Traps, Patikhom Tamtip, 1 ♀; T 312 Loei, Phu Ruea NP, office, 17°28.805'N 101°21.242'E, 870 m, 5.vii. 2006–12.vii.2006, Malaise trap, Patikhom Tamtip, 2 ♀. T316 Loei, Phu Ruea NP, Subhnonghin, 17°28.772'N 101°21.308'E, 860 m, 19.vii.2006–26.vii.2006, Malaise trap, Nukoonchai Jaroenchai, 1 ♂, 1 ♀; T317 Loei, Phu Ruea NP office, 17°28.826'N 101°21.330'E, 860 m, 19.vii.2006–26.vii. 2006, Malaise trap, Nukoonchai Jaroenchai, 3 ♂; T319 Loei, Phu Ruea NP, Subhnonghin, 17° 28.772'N 101° 21.308'E, 860 m, 26.vii.2006–2.viii.2006, Malaise trap, Nukoonchai Jaroenchai, 1 ♂; T348 Chiang Mai, Doi Inthanon NP, campground pond, 18°32.657'N 98°31.482'E, 1200 m, 27.ix.2006–5.x.2006, Malaise trap, Y. Areeluck, 1 ♂. T373 Chiang Mai, Doi Inthanon NP, campground pond, 18°32.657'N 98°31.482'E, 1200 m, 19.x.2006–26.x.2006, Malaise trap, Y. AREELUCK, 1 ♂; T532 Loei, Phu Ruea NP, Huay Taey ditch, 17°30.128'N 101°20.339'E, 1233 m, 19.viii. 2006–26.viii.2006, Malaise trap, Nukoonchai Jaroenchai, 1 ♂; T819 Loei, Phu Ruea NP, Pah Lo Noy, 17°30.502'N 101°20.868'E, 1343 m, 7.ix.2006–8.ix.2006, Pan traps, Nukoonchai Jaroenchai, 2 ♀; T822 Loei, Phu Ruea NP, Pah Lo Noy, 17°30.502'N 101°20.868'E, 1343 m, 10.ix.2006–11.ix.2006, Pan traps, Nukoonchai Jaroenchai, 2 ♀; T824 Loei, Phu Ruea NP, Pah Lo Noy, 17°30.502'N 101°20.868'E, 1343 m, 5.ix.2006–12.ix.2006, Malaise trap, Nukoonchai Jaroenchai, 1 ♀. T828 Loei, Phu Ruea NP, Nature trail, 17°30.740'N 101°20.650'E, 1353 m, 12.ix.2006–19.ix.2006, Malaise trap, Nukoonchai Jaroenchai, 2 ♀; T835 Loei, Phu Ruea NP, Sa Sawan, 17°30.735'N 101°20.601'E, 1352 m, 26.ix.2006–2.x.2006, Malaise trap, Nukoonchai Jaroenchai, 1 ♂.

Distribution. China, Taiwan, Java, Sumatra.
The species is recorded for the first time from Vietnam and Thailand.

Disciphus humeralis sp. n.

Holotype male Thailand, Chiang Mai, Doi Inthanon NP, campground pond, 18°32.657'N 98°31.482'E, 1200 m, 30.viii.2006–6.ix.2006, Malaise trap, Y. AREELUCK (T 237).

The holotype is deposited in the Entomology section of QSBG (Queen Sirikit Botanical Garden), P.O. Box 7, Mae Rim Chiang Mai 50180, Thailand.

Differential diagnosis. The specimen has clear wing, only slightly tinged in 1st posterior cell, dark yellow postpronotum, distinctly pubescent arista, scutellum black, fore tibia and fore tarsus black, hind tibia slightly darkened. It distinguishes from other species of the genus by wing without black spots and dark yellow postpronotum. It is similar to *D. alatus* BECKER by its pubescent arista.

Description. Head yellow, wider than thorax. Frons nearly parallel-sided, yellow. Ocellar triangle with oval black spot, leaving yellow apex and hind corners. Gena and face yellow, gena narrower than fist flagellomere. Occiput with black spot, not extends eyes and with semicircular upper border. Five orbital setae, two posterior ones long, slightly shorter than outer vertical seta. First flagellomere yellow, about 1.5 times as broad as long. Arista entirely black, strongly pubescent. Palpi yellow.

Thorax black except for dark yellow postpronotum. Scutellum and its projection black, projection as long as scutellum. Notopleural setae 1+1. Postnotum black. Wing hyaline, longer than abdomen, only slightly tinged in 1st posterior cell. All veins yellow. Ratio of costal sectors 2:3:4 as 30:25:13. Veins R_{3+4} and M_{1+2} parallel. Legs mostly yellow, fore tibia and tarsus black, hind tibia darkened. Abdomen brown, two first tergites white.

Body length 1.8 mm.

Notes to *Disciphus*. KANMIYA (1983) indicated in his key that the scutellum of *D. peregrinus* is black, scutellum of *D. flavitarsis* was described as entirely black with yellow projections. All examined specimens of *D. flavitarsis* (1 ♂, 4 ♀) have black scutellum with yellow projections. The colour of scutellum and projections and fore and hind tibia of *D. peregrinus* significantly vary. Fore tibia coloured from darkened to entirely black and the hind tibia entirely yellow or darkened. Fore tarsus always entirely black. Among Vietnam's specimens 1 female has scutellum and projections black; 1 female scutellum black, projections dark yellow; 2 males and 2 females scutellum yellow darkened, projections yellow. Other specimens (11 males, 8 females) with scutellum and projections yellow. Among the Thailand's specimens only one (Rayong, Khao Chamao. 10.12.2007) has black scutellum and tubercles, all the other specimens having yellow scutellum and projections.

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