**Table S2.** Haplotype information of COI sequences of *Varroa destructor* analyzed in this study, including haplotype abbreviation and their relevant sequences number, haplotype name, accession number, acquired country with its individuals, parasite host, and the cited references

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Haplotype No.\* | Sequences No. | Haplotype | Accession No (individuals). | Country (individuals) | Host\*\* | References |
| Hap 1 | 1 | Sri Lanka | AF106896 | Sri Lanka | Acer | Anderson &Trueman 2000 |
| Hap 2 | 1 | Nepal | AF106898 | Nepal | Acer | Anderson &Trueman 2000 |
| Hap 3 | 9 | China | AF106900 (6) | China (4)  China (2) | Acer  Acer | Anderson &Trueman 2000  Zhou et al. 2004 |
| GQ379065-6(2) | China | Acer | Navajas et al. 2010 |
| MN551179 | China | Acer | Li et al. 2019 |
| Hap 4 | 4 | China 2 | AY372063 (4) | China | Acer | Zhou et al. 2004 |
| Hap 5 | 1 | China 2-1 | GQ379067 | China | Acer | Navajas et al. 2010 |
| Hap 6 | 1 | China 3 | GQ379068 | China | Acer | Navajas et al. 2010 |
| Hap 7 | 17 | Vietnam | AF106901 (13) | Vietnam (5)  China (4) Thailand (4) | Acer  Acer  Acer | Anderson &Trueman 2000  Zhou et al. 2004  Warrit et al. 2006 |
| GQ379061 | Vietnam | Acer | Navajas et al. 2010 |
| GQ379062 | China | Acer | Navajas et al. 2010 |
| GQ379063-4 (2) | Thailand | Acer | Navajas et al. 2010 |
| Hap 8 | 15 | Taiwan | OK335527-41 (15) | Taiwan | Acer | In this study |
| Hap 9 | 215 | Japan (Thailand) | AF106897 (39) | Japan (7)  Thailand (2)  Brazil (5)  Canada (4)  Japan (9)  Thailand (3)  USA (9) | Acer  Acer  Amel  Amel  Amel  Amel  Amel | Anderson &Trueman 2000  Anderson &Trueman 2000  Anderson &Trueman 2000  Anderson &Trueman 2000  Anderson &Trueman 2000  Anderson &Trueman 2000  Anderson &Trueman 2000 |
| AJ784872 | Taiwan | Amel | Solignac et al. 2005 |
| GQ379069 | Taiwan | Amel | Navajas et al. 2010 |
| GQ379070-2 (3) | Japan | Acer | Navajas et al. 2010 |
| GQ379073 | Thailand | Amel | Navajas et al. 2010 |
| GQ379074 | Japan | Amel | Navajas et al. 2010 |
| KX458253 | Brazil | Amel | GenBank |
| OK335542-709 ((168) | Taiwan | Amel | In this study |
| Hap 10 | 329 | Russia (Korea) | AF106899 (158) | Korea (6)  Argentina (6)  Belgium (2)  Brazil (1)  Canada (3)  China (4)  Costa Rica (4)  Denmark (2)  Egypt (2)  France (3)  Greece (2)  Germany (4)  Indonesia (10)  Israel (2)  Italy (6)  Korea (2)  Mexico (5)  Netherlands (2)  Puerto Ricao (3)  Philippines (11)  Portugal (2)  Russia (3)  South Africa (4)  Spain (2)  Switzerland (2)  Thailand (3)  Ukraine (3)  UK (5)  Uruguay (2)  USA (9)  Vietnam (12)  Yugoslavia (2)  China (29) | Acer  Amel  Amel | Anderson & Trueman (2000)  Anderson & Trueman (2000)  Zhou et al. 2004 |
| AF010478 (23) | German (7)  Indonesia (16) | Amel | Anderson & Fuchs 1998 |
| AJ493124 | France | Amel | Navajas et al. 2002 |
| GQ379056 (4) | Korea | Amel | Navajas et al. 2010 |
| GQ379057 | China | Amel | Navajas et al. 2010 |
| GQ379058 | Vietnam | Amel | Navajas et al. 2010 |
| GQ379059 | China | Acer | Navajas et al. 2010 |
| GU724765,66,69 (3) | India | Amel | GenBank |
| HM242394-414 (Excluding 397, 399, 402, 408, 411) (16) | India | Amel | GenBank |
| HM641259-261 (3) | India | Amel | GenBank |
| JX827474-86 (13) | Madagascar | Amel | Rasolofoarivao et al. 2013 |
| KJ403740,41,43 (3) | Suadi Arabia | Amel | GenBank |
| KU543608-12 (5) | Iran | Amel | GenBank |
| KU196784-5 (2) | Brazil | Amel | GenBank |
| KX255668 | Kenya | Amel | GenBank |
| KX375137-40 (4) | Iran | Amel | GenBank |
| KX458254 | Brazil | Amel | GenBank |
| KY380010-55 (46) | Brazil | Amel | GenBank |
| MG793455 (2) | New Zealand | Amel | Li et al. 2018 |
| MH747654-64 (11) | Iran | Amel | GenBank |
| MN179648 | Thailand | Amel | Dietemann et al. 2019 |
| MN551178 | China | Amel | Li et al. 2019 |
| OK335710-12 (3) | China | Amel | In this study |
| OK335713-37 (25) | Thailand | Amel | In this study |
| Hap 11 | 1 |  | GQ379060 | China | Amel | GenBank |
| Hap 12 | 1 |  | GU724767 | India | Amel | GenBank |
| Hap 13 | 1 |  | GU724768 | India | Amel | GenBank |
| Hap 14 | 1 |  | HM242397 | India | Amel | GenBank |
| Hap 15 | 1 |  | HM242399 | India | Amel | GenBank |
| Hap 16 | 1 |  | HM242402 | India | Amel | GenBank |
| Hap 17 | 1 |  | HM242408 | India | Amel | GenBank |
| Hap 18 | 1 |  | HM242411 | India | Amel | GenBank |
| Hap 19 | 1 |  | HM242415 | India | Amel | GenBank |
| Hap 20 | 1 |  | HM641257 | India | Amel | GenBank |
| Hap 21 | 1 |  | HM641258 | India | Amel | GenBank |
| Hap 22 | 1 |  | KJ403739 | Suadi Arabia | Amel | GenBank |
| Hap 23 | 1 |  | KJ403744 | Suadi Arabia | Amel | GenBank |
| Hap 24 | 2 |  | KJ403742  KJ507740 | Suadi Arabia  Suadi Arabia | Amel  Amel | GenBank  GenBank |
| Hap 25 | 1 |  | KJ507741 | Suadi Arabia | Amel | GenBank |
| Hap 26 | 1 |  | LN873226 | Italy | Amel | GenBank |
| Hap 27 | 1 |  | MK482687 | Iran | Amel | GenBank |
|  |  |  |  |  |  |  |
| Hap\* |  |  | Argentina | Argentina (2) | Amel | 304 bp, Maggi et al. 2012 |
| JX970938 | Serbia | Amel | 257 bp, GenBank |
| MN175996 | Argentina | Amel | 217 bp, GenBank |
| MN179652 | Thailand | Amel | 317 bp ,GenBank |
| MN179654 | Thailand | Amel | 311 bp, GenBank |
| MH449978 | India | Amel | 278 bp, GenBank |
| MH712741 | South Korea | Amel | 296 bp, GenBank |

\*Hap: Sequences length less than 350bp were not included in this analysis. \*\*Acer: *Apis cerana*; Amel: *Apis mellifera*