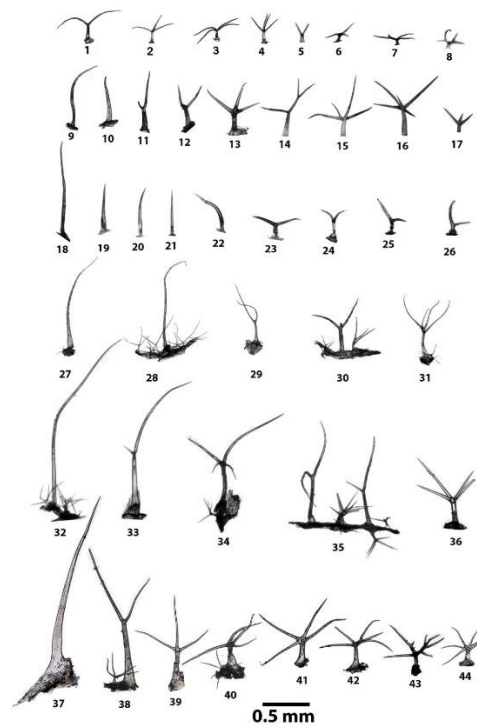


## Molecular and Morphological evidence support the delimitation of a new genus, *Hafezia gen. nov.* in Arabideae (Brassicaceae)

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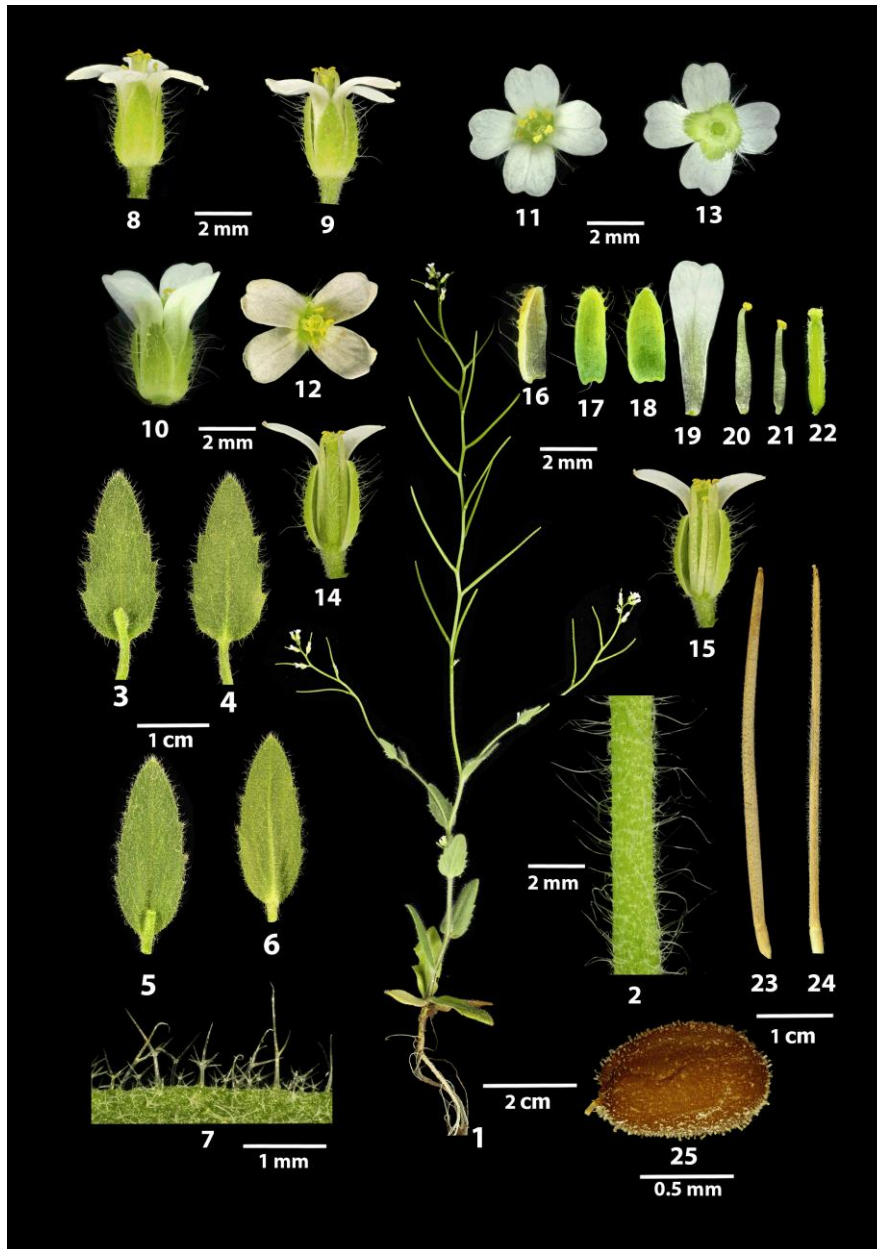
Department of Biology, College of Science, Shiraz University, Shiraz, Iran



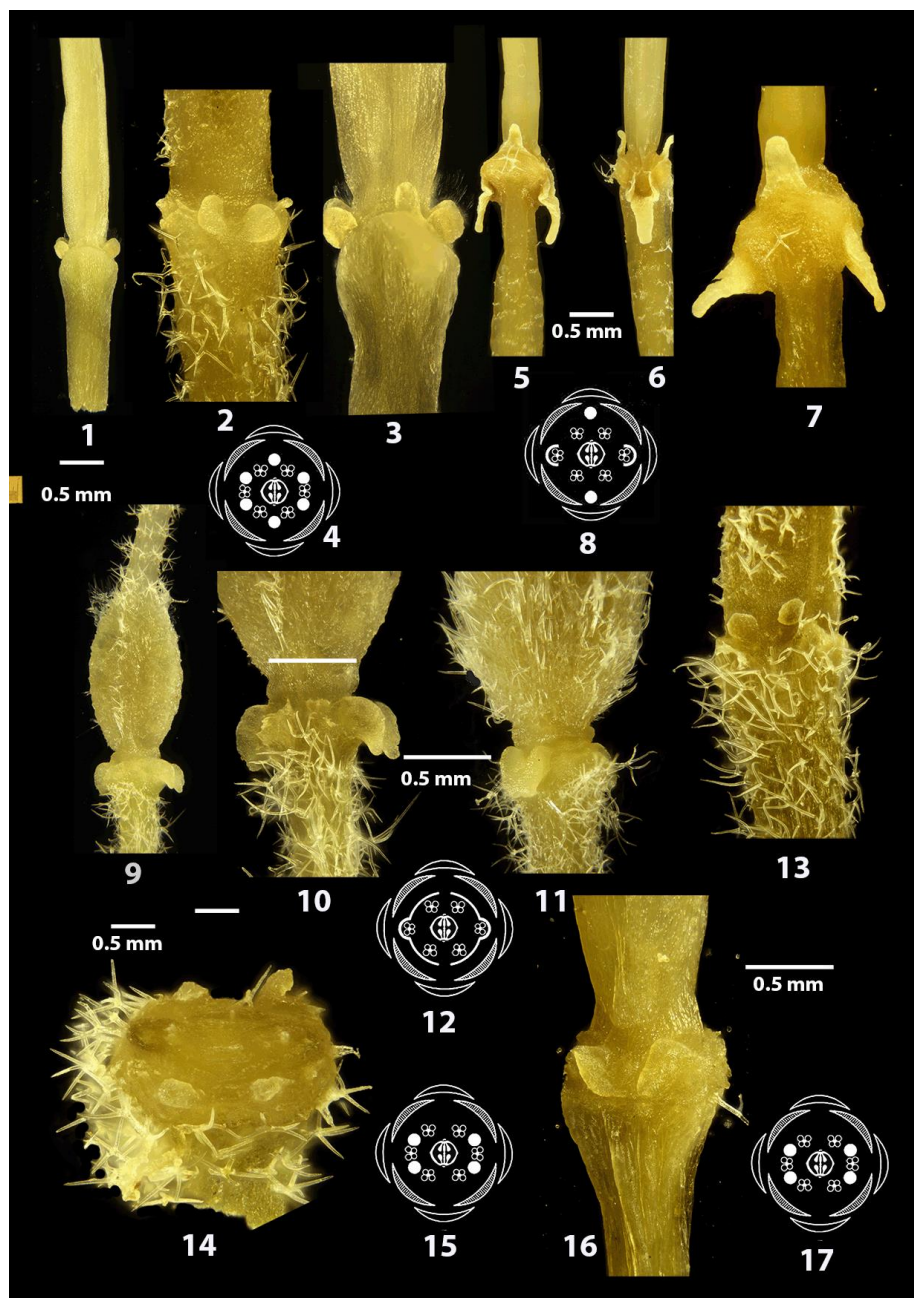
**Figure S1:** Trichome types of representatives of *Arabis*, *Aubrieta*, *Hafezia*, and *Draba* genera in Iran using a light microscope. **1-8: *Arabis nova*** 1) stalked Y-shaped trichomes, 2) stalked, 3-armed trichome, 3-4) stalked, 4-armed trichomes, 5) stalked Y-shaped trichome, 6) stalked, 3-armed trichome, 7-8) stalked, 4-armed trichomes; **9-17: *Arabis caucasica*** 9-10) simple trichome, 11-12) stalked Y-shaped trichomes, 13-14) stalked, 3-armed trichome, 15) stalked, 4-armed trichomes, 16) stalked, 5-armed trichome, 17) stalked, 3-armed trichome; **18-26: *Arabis sagittata*** 18-22) simple trichome, 23-26) stalked, 2-armed trichome; **27-31: *Aubrieta parviflora*** 27) simple, long trichomes, 28) simple, long trichomes along with very small stalked Y-shaped and 3-armed trichomes, 29) stalked Y-shaped trichome, 30) small and large stalked Y-shaped and 3-armed trichomes, 31) stalked, very small and large 3-armed and 4-armed trichomes; **32-36: *Hafezia aucheri*** 32) simple, long trichome with very small Y-shaped and 2-4-armed trichomes, 33) stalked Y-shaped trichome, 34) large and very small stalked, 4-armed trichome, 35) large and small stalked, Y-shaped together with stalked 2-4-armed trichomes, 36) stalked 4-armed trichome; **37-44: *Draba rimarum*** 37) simple, very long trichome, 38) very long stalked Y-shaped and very small stalked 4-shaped trichomes, 39) stalked, 3-armed trichome, 40-41) long and small stalked, 4-armed trichomes, 42) stalked, 5-armed trichome, 43) stalked, 7-armed dendritic trichome, 44) 6-armed trichome.



**Figure S2:** Stem trichome of representatives of *Arabis*, *Aubrieta*, *Hafezia*, and *Draba* genera in Iran using light microscope. 1) *Arabis nova*; 2-4) *Arabis caucasica*; 5) *Aubrieta parviflora*; 6-7) *Hafezia aucheri*; 8) *Draba rimarum*.



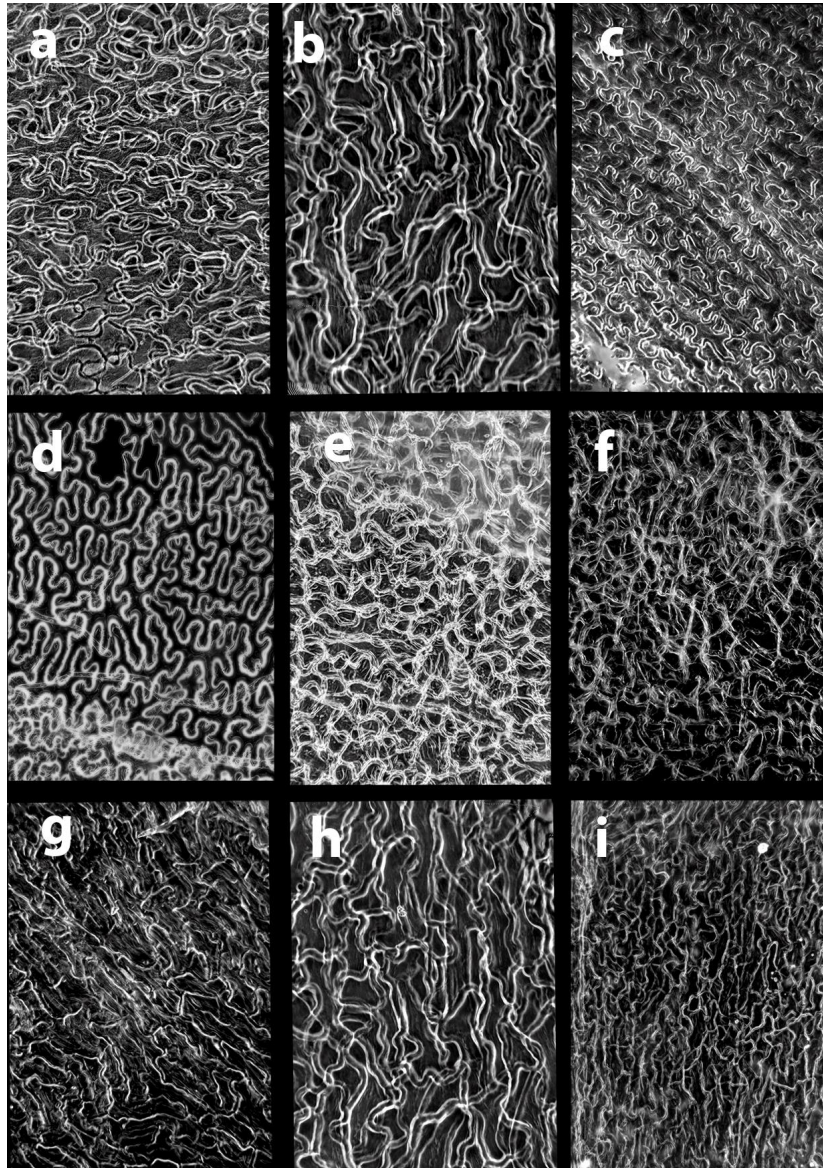
**Figure S3:** Morphological characteristics of *Hafezia aucheri* *comb. nov.* in Iran. **1:** Life form, **2:** stem, **3-6:** stem leaves, **7:** trichome in leaves, **8-10:** flower, **11-13:** flower (ventral and dorsal view, respectively), **14:** part of flower showing gynoecium, **15:** part of flower showing androecium **16-18:** sepal, **19:** petal, **20-21:** anthers, **22:** gynoecium, **23-24:** fruit (anterior and lateral views, respectively), **25:** seed.



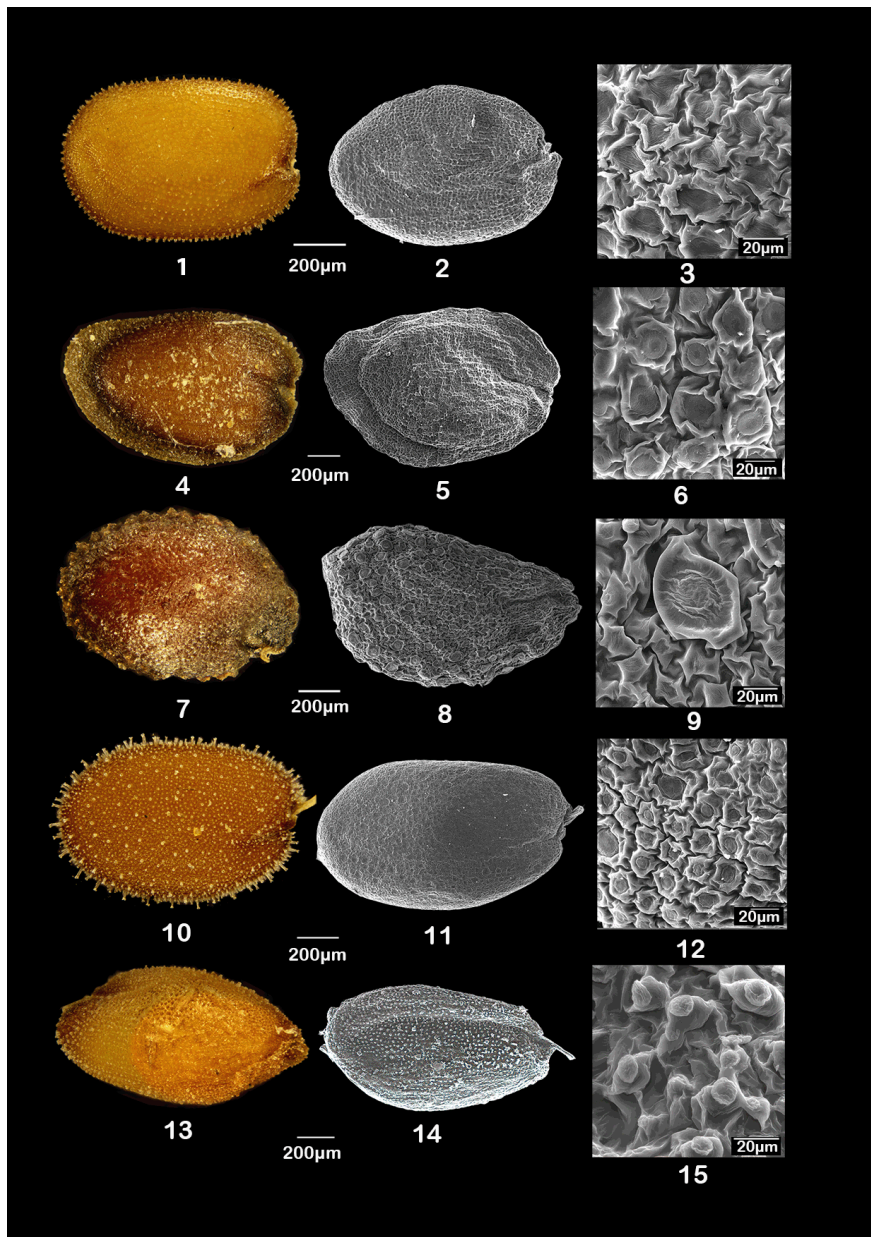
**Figure S4:** Nectary types of representatives of *Arabis*, *Aubrieta*, *Hafezia*, and *Draba* genera using light microscope. **1-4:** *Arabis nova* 1) median view, 2) x, 3) median view, 4) floral diagram with position of nectar glands; **5-8:** *Arabis caucasica* 5) median view, 6) lateral view, 7) median view, 8) floral diagram with position of nectar glands; **9-12:** *Aubrieta parviflora* 9-10) median view, 11) lateral view, 12) floral diagram with position of nectar glands; **13-15:** *Hafezia aucheri* 13-14) lateral view, 15) floral diagram with position of nectar glands; **16-17:** *Draba rimarum* 16) lateral view, 17) floral diagram with position of nectar glands.



**Figure S5:** Fruit representatives of *Arabis*, *Aubrieta*, *Hafezia*, and *Draba* genera using light microscope. **1-5:** *Arabis sagittata* (Bertol.) DC. **1)** dorsal view, **2)** lateral view, **3)** dorsal view, one valve removed, **4)** valve (dorsal view), **5)** fruit seeds; **6-11:** *Arabis caucasica* **6)** dorsal view, **7)** lateral view, **8)** dorsal view, one valve removed, **9)** valve (dorsal view), **10)** lateral view, **11)** fruit seeds; **12-17:** *Arabis nova* **12)** dorsal view, **13)** lateral view, **14)** dorsal view, one valve removed, **15)** lateral view, **16)** valve (dorsal view), **17)** fruit seeds; **18-22:** *Hafezia aucheri* **18)** dorsal view, **19)** lateral view, **20)** dorsal view, one valve removed, **21)** valve (dorsal view), **22)** fruit seeds; **23-25:** *Aubrieta parviflora* **23)** dorsal view, **24)** lateral view, **25)** dorsal view, two valve removed; **26-29:** *Draba rimarum* **26)** dorsal view, **27)** lateral view, **28)** dorsal view, one valve removed, **29)** fruit seeds.



**Figure S6:** Septum surface of representatives of *Arabis*, *Aubrieta*, *Hafezia*, and *Draba* genera using a light microscope. **a-c)** *Arabis nova*; **d)** *Arabis caucasica*; **e-f)** *Aubrieta parviflora*; **g-h)** *Hafezia aucheri*; **i)** *Draba rimarum*. Except for images labeled “b” and “h” with a scale of  $\times 1000$ , the scale bar for all images is  $\times 400$ .



**Figure S7:** Seed surface micro-ornamentation of *Arabis*, *Aubrieta*, *Hafezia*, and *Draba* genera using light and scanning electron microscope. 1-3: *Arabis nova*, 4-6: *Arabis caucasica*, 7-9: *Aubrieta parviflora*, 10-12: *Hafezia aucheri*, 13-15: *Draba rimarum*.