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# Nomenclature of the fungal genus name *Albigo* – a story of confusion and misinterpretation

Uwe BRAUN

**Abstract**: Braun, U. 2018: Nomenclature of the fungal genus name *Albigo* – a story of confusion and misinterpretation. Schlechtendalia **34**: 91–94.

The nomenclatural status of the fungal genus name *Albigo* is discussed. *Albigo* was introduced by Ehrhart (1791, 1792) as a general technical term for powdery mildew, not as a formal taxon name. This name has usually been ascribed to Steudel (1824) as validating author, but Steudel (l.c.) just listed "*Albigo* Ehrh." as a genus name (without any description), confined this genus to a single species, viz., the hop powdery mildew [*Alphitomorpha macularis*], and reduced *Albigo* to synonymy with *Alphitomorpha*, i.e., *Albigo* was not accepted as a genus in this publication and was, therefore, also not validly published (Art. 36.1). The first validation of *Albigo* is by Reum (1833). The bibliographic corrections relevant for the nomenclature of *Albigo* and *A. macularis* are presented. *Mucor erysiphe*, the only powdery mildew species involved in Ehrhart's (l.c.) publication, is neotypified and reduced to synonymy with *Podosphaera macularis* (≡ *Alphitomorpha macularis*).

**Zusammenfassung**: Braun, U. 2018: Nomenklatur des Pilzgattungsnamens *Albigo* – eine Geschichte von Verwechslung und Fehldeutung. Schlechtendalia **34**: 91–94.

Der Status der Nomenklatur der Pilzgattung *Albigo* wird diskutiert. *Albigo* wurde von Ehrhart (1791, 1792) als allgemeine Fachbezeichnung für Mehltau eingeführt, aber nicht als formaler Taxon-Name. Dieser Name wird gewöhnlich Steudel (1824) als validierenden Autor zugeschrieben, der jedoch "*Albigo* Ehrh." als Gattungsnamen (ohne jegliche Beschreibung) nur aufgelistet hat, die Gattung auf eine einzige Art einschränkte, und zwar auf Hopfenmehltau [*Alphitomorpha macularis*], und schließlich *Albigo* in die Synonymie von *Alphitomorpha* gestellt hat, was bedeutet, dass dieser Name in dieser Arbeit nicht gültig veröffentlicht wurde (Art. 36.1). Die erste Validierung von *Albigo* als eigene Gattung erfolgte durch Reum (1833). Die für *Albigo* and *A. macularis* nomenklatorisch relevanten bibliographischen Änderungen werden präsentiert. *Mucor erysiphe*, die einzige in Ehrharts (l.c.) Beitrag involvierte Mehltauart, wird neotypisiert und somit als Synonym zu *Podosphaera macularis* (≡ *Alphitomorpha macularis*) gestellt.

**Key words:** Powdery mildew, *Erysiphales*, *Podosphaera*, *Mucor erysiphe*, nomenclature, typification.

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Salmon (1900: 44) discussed the nomenclatural status of the name "Albigo", introduced by Ehrhart (1891, 1892), in detail and classified this name as "a word used in a quite general sense for all mildews", and all subsequent authors dealing with the generic taxonomy of powdery mildews followed (Homma 1937; Blumer 1933, 1967; Braun 1986; Braun & Cook 2012, etc.). However, Salmon's (l.c.) comment "we find it nowhere defined as a genus" is not correct. In Index fungorum and MycoBank, the fungal genus name *Albigo* was listed as a recognized genus, incorrectly ascribed to Steudel (1824) as validating author and reduced to synonymy with *Podosphaera* Kunze, i.e., these databases principally followed Salmon's interpretation. However, the history of the name *Albigo* is confusing and has been controversially discussed in the past. One of the basic problems of previous authors was attributable to lacking knowledge of Ehrhart's (l.c.) original introduction of the name "Albigo" as well as other early treatments of this name. The clarification of the complicated nomenclature of *Albigo* requires a detailed discussion of its history.

The name "Albigo" was first introduced by Ehrhart (1791). Ehrhart's (l.c.) complete paper, including the introduction of "Albigo", was once again published in Ehrhart (1792). Following the state of knowledge in his time, Ehrhart (l.c.) regarded powdery mildew as a single species, *Mucor erysiphe* L. His paper aimed at defining the German term "Mehltau" which had often been confused with other leaf-inhabiting fungi and insects. He described the white chalky powdery patches on leaves and minute globules (fruiting bodies) formed later in the season. In conclusion, he clearly stated that powdery mildew refers to an organism, viz., a fungus ("Schwamm") with the name *Mucor erysiphe*. In a footnote, he proposed the term "Albigo" in order to differentiate powdery mildew ("Mehltau") from rust fungi ["Rubigine" (Rost, Rötheln, Karfungel)"]. He intended to introduce a new general technical term for powdery mildew to avoid further linguistic and scientific confusion with "rust" [he used the stem of "albus" (white)

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and added "igo" referring to "-ago" and the ending "-go" (noun base, word-forming element to indicate possession of a property, see Stearn 1992), i.e., although he utilized a Latin form for his new term, he did not intend to introduce a new genus name. He recognized and maintained Linné's (1753) name *Mucor erysiphe* and referred to "Ehrh., Pl. Crypt. Linn. 100" as reference material (distributed as "*Mucor erysiphe* Linn., Hannoveræ" [the duplicate deposited in Munich, M-0015472, contains a stipule of *Pisum sativum* with white mycelium and chasmothecia of *Erysiphe pisi* DC.]). Therefore, I fully agree with Salmon's (l.c.) interpretation of Ehrhart's (l.c.) name "Albigo".

Steudel (1824: 52) listed "*Albigo* Ehrh." as a genus name (without any description, but with reference to "Ehrhart"), along with "*A. humili* Ehrh." (a name not included in Ehrhart, l.c.), but added "vid. Alphitomorpha" (highlighted in bold, = pro syn.). On page 54, Steudel (l.c.) reduced "*A. humili* Ehrh." and *Mucor erysiphe*, the only species name cited in Ehrhart's (l.c.) publication, to synonymy with *Alphitomorpha macularis* Wallr., i.e., Steudel (l.c.) did not recognize *Albigo* as an accepted genus but as a synonym (Art. 36.1). Hence, "Albigo" was not validated in Steudel (l.c.), but the genus name *Albigo* was later validated in Reum (1833: 68). In this overlooked publication, he recognized *Albigo* as a genus, added a description and introduced the combinations "*A. communis* (Wallr.) Reum" (based on the illegitimate [superfluous] name *Alphitomorpha communis*, Art. 6.10) and *A. macularis* (Wallr. : Fr.) Reum (based on *Alphitomorpha macularis*). Hence, *A. macularis* is the only legitimate and valid species name connected with the validation of *Albigo* and has to be considered the type species of this genus (Art. 40.3). Streinz (1862) followed Steudel's (l.c.) interpretation of *Albigo*, but reduced this name to synonymy with "*Erysibe*" (= *Erysiphe* DC.), together with *Podosphaera* Kunze and all other powdery mildew genera introduced by Leveillé (1851), and he cited "*Albigo macularis* Ehrh. in sched." together with "*Mucor erysiphe* α L." as synonyms of "*Erysibe macularis*" [Streinz (l.c.) referred to the pre-Linnean name "*Erysibe*" used by Ehrenberg (1821) and Link (1824) instead of *Erysiphe*, which can simply be considered an orthographic variant (Fries 1829: 234–235, Braun & Cook 2012: 632)].

Kuntze (1893) recognized *Albigo* as a genus, based on *Alphitomorpha macularis* ("*Albigo humuli* Steud., *A. macularis* Streinz") as principal species and cited *Sphaerotheca* Lév. as a synonym. Kuntze's (l.c.) treatment shows that he was not aware of the publications of Ehrhart (l.c.) and of Reum (l.c.). Kuntze (l.c) emphasized that *Albugo* (Pers.) Roussel (*Oomycota*) and *Albigo* are not confusable and may be used in parallel, which is, however, questionable and disputable. Magnus (1899) emphatically objected to Kuntze's (l.c.) nomenclatural decision to use *Albigo* instead of *Sphaerotheca*, although he was neither aware of Ehrhart's (l.c.) publication nor of Reum's (l.c.) validation (he just supposed that the name "Albigo" might be included in Ehrhart's "Beiträge zur Naturkunde"). *Albigo* is, indeed, valid and older than *Sphaerotheca*, but the latter genus is, based on the current phylogenetic genus concept within the *Erysiphaceae*, now treated as a heterotypic synonym of *Podosphaera* (Braun & Cook 2012). Therefore, a proposal to reject *Albigo* as a name confusable with *Albugo* or to conserve *Sphaerotheca* is not crucial.

Nomenclatural consequences can be summarized as follows:

***Albigo*** Ehrh. ex Reum, Oekonomische Botanik: 68 (1833).

Type species: *Alphitomorpha macularis* Wallr.

***Albigo macularis*** (Wallr.) Reum, Oekonomische Botanik: 69 (1833).

Another open problem relates to *Mucor erysiphe*, the oldest species name introduced for a powdery mildew. Linné (l.c.) did not differentiate between particular powdery mildews, i.e., he obviously considered the causal agent of powdery mildew as belonging to a single species, for which he introduced the name *M. erysiphe* ("Habitat in foliis Humuli, Aceris, Lamii, Galeopsidis, Lithospermi"). Steudel (l.c.) was the first who confined the name *Mucor erysiphe* to powdery mildew on hop (*Humulus lupulus*), cited in Linné (l.c.) as first host of this species, and all subsequence authors, including Reum (l.c.), Streinz (l.c.) and Kuntze (l.c.), agreed to this proposal and followed, but a formal typification of *M. erysiphe* is still lacking. Attempts to trace syntype material among Linné's collections deposited at BM, LINN and S ended in failure.

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Collections labeled as *M. erysiphe* are not preserved. There is a single specimen deposited and labeled as "*Mucor* sp." [on *Acer platanoides*] (LINN 1289.8) with a subsequently added handwritten annotation ("Erysiphe bicornis"). It is unknown, quite unclear and doubtful whether this collection pertains to Linné's original material on which he had based the description of *M. erysiphe*. Therefore, I prefer a neotypification in the sense originally proposed by Steudel (l.c.) and generally accepted by subsequent authors. A Swedish specimen of the hop powdery mildew, collected in the 19th century, is designated as neotype:

***Mucor erysiphe*** L., Sp. pl. **2**: 1186 (1753)

**Neotype** (designated here, MycoBank, MBT382460): Sweden, Södermanland, Helgona, Sdm. Allhelgona s:n, Bullersta, on *Humulus lupulus*, Aug. 1892, G.V. Schotte (S-F245767).

This typification makes *M. erysiphe* a heterotypic synonym of *Podosphaera macularis* (Wallr. : Fr.) U. Braun & S. Takam. (≡ *Alphitomorpha macularis*), which is a sanctioned name that has priority over *M. erysiphe* (Art. 15.1).

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**Address of the author**

Uwe Braun, Martin-Luther-Universität, Institut für Biologie, Bereich Geobotanik und Botanischer Garten, Neuwerk 21, 06099 Halle (Saale), Germany.
(E-mail: uwe.braun@botanik.uni-halle.de)

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