



A. Conidiogenous cells and conidia. B. Asci, ascospores and swollen inter-ascus hyphae.

Valsa malicola Z. Urb., *Česká Mykologie* **10**: 209, 1956.

Cytospora schulzeri Sacc. & P. Syd., *Sylloge Fungorum* **14** (2): 918, 1899.

Anamorph. Preceding teleomorph usually in the same stroma, or separate from and among teleomorphic stromata. *Anamorphic stromata.* Covering a large area of bark, often compact, rounded, flat, conical, or convex on the edge and sunken in the centre, 1-2 mm diam, with a single locule; disc often with a glittering surface and rarely 1, more often 2-3, or even up to 10-12 black ostioles integrated in the centre; ectostroma conical or cylindrical, highly elevated over the periderm, dark grey inside; endostroma almost inconspicuous.

Conidiomata. Composed of numerous irregular concentric chambers, with black radiating incomplete walls. *Conidiophores*. Filamentous, branched, 12-15 µm long. *Conidiogenous cells*. Colourless, thin-walled, smooth, cylindrical or slightly tapered, 6-10 x 1-2 µm, with slightly thickened walls at the fertile apex (conidiogenous cells, up to about 25 µm long are also occasionally seen in this and other *Valsa* taxa). *Conidia*. Colourless, thin-walled, aseptate, smooth, allantoid, (4-) 4.5-6 (-7) x 1 µm, colourless, in the mass wax yellowish, extruding in fulvous, melleous droplets. *Conidial development*. Initiation holoblastic, by apical wall building, with simultaneous maturation; delimitation by a double septum, with delimitation of subsequent conidia at the same point on the conidiogenous cell as for the first, so that the conidiogenous cell does not elongate; secession by fission of the double septum; proliferation enteroblastic, percurrent, subsequent proliferations giving rise to the wall-thickening observed at the apex of the conidiogenous cell.

Teleomorph. Following anamorph, usually in the same stroma. *Teleomorphic stromata*. Often compact, covering the whole surface of the bark, truncate-conical or dome shaped, flat, containing up to 13 ascomata arranged in a circle or irregularly and adjacent to the wood at the stroma base, with the remains of conidiomata among the ascomata; disc penetrating the periderm, large, circular, oblong or irregular, light grey, whitish, ashen or grey, with ostioles forming a ring around its margin, while the central area remains unoccupied, the ostioles either on the same level as the stroma or with beaks extending up to 0.5 mm beyond and bent outwards; ectostroma externally usually light to dark grey, internally dun or olivaceous, often conspicuous in upper regions; endostroma rudimentary, often inconspicuous. *Ascomata*. Perithecial, with long beaks, swollen at the tip, and converging and penetrating the disc. *Asci*. Clavate, with only one functional wall layer visible with the light microscope, mostly 8-spored, rare 4- or 6-spored, (41-) 50-65 (-70) x (8-) 9-11 (-18) µm, with an apical ring usually appearing as two refractive quadrangles, not turning blue in iodine, often becoming detached from the hymenium, floating freely and with a rounded base. *Ascospores*. Colourless, thin-walled, smooth, aseptate, slightly curved, sometimes unequal, or tapered, very variable in size, (13-) 17-28 (-30) x 3-6 µm. *Paraphyses*. A few inconspicuous thin-walled, swollen inter-ascus hyphal elements can sometimes be observed in younger ascomata by using phase contrast microscopy.

DISEASE: *Valsa malicola* is associated with dieback of *Malus* twigs, especially weakened by other factors, for example when frozen, burnt, wounded, injured by insects or attacked by other pathogens.

HOSTS: On dead or dying twigs of *Malus* species, and other Maloideae (*Cotoneaster*, *Crataegus*, *Cydonia*, *Pyracantha*, *Pyrus*, *Rosa*). The fungus can also be found on other members of the Rosaceae (e.g. *Prunus*), but only infrequently, and mainly as the anamorph.

GEOGRAPHICAL DISTRIBUTION: Asia: Armenia, Azerbaijan, China, Georgia, Kazakhstan, Russia. Europe: Austria, Czech Republic, Germany, Italy, Latvia, Lithuania, Portugal, Rumania, Russia, Slovakia, Sweden, Switzerland, UK, Ukraine. North America.

PHYSIOLOGIC SPECIALIZATION: None reported.

TRANSMISSION: Both conidia and ascospores are air-borne, especially under humid conditions. Brightly coloured droplets or tendrils of conidia are often exuded from conidiomata after rain.

NOTES: *Valsa malicola* is separated from *V. ambiens* by the following distinctive characters: a dark grey ectostroma, narrower ascospores, the physical proximity of anamorph and teleomorph, and a rather limited range of hosts, mainly in the Maloideae. Specimens on *Malus* collected by the senior author often exhibit the presence of conidiomata (or their remnants) surviving inside ascomata, particularly when these are still immature. Another diagnostic feature of the anamorph, *Cytospora schulzeri*, is that it has few ostioles, two or three, or even more, up to 15, usually forming a ring. Urban (1957) divided the genus *Valsa* into three sections. *Valsa malicola* is a representative of sectio *Valsa*. Information about hosts, substratum and geographical distribution is derived partly from 18 records in the junior author's computerized database. The *Open Society Foundation* is thanked for supporting the senior author. The UK Darwin Initiative is thanked for providing the computer on which this work was prepared.

LITERATURE: Spielman, *Canadian Journal of Botany* **63**: 1355-1378, 1985. Urban, *Preslia* **29**: 394-395, 1957. Urban, *Revise Československých Zástupků Rodů Valsa, Leucostoma a Valsella, Rozpravy Československé Akademie Věd*. 101 pp., 1958 [esp. pp. 41-44]. Гайова, Дудка [Hayova & Dudka], *Український Ботанічний Журнал* [*Ukrainian Botanical Journal*] **42** (5): 32-36, 1985. Гврितिшвили [Gvritishvili], *Микология и Фитопатология* [*Mycology & Phytopathology*] **2** (2): 87-92, 1968. Гврितिшвили [Gvritishvili], *Грибы Рода Cytospora Fr. в СССР* [*The Fungal Genus Cytospora Fr. in the USSR*]. Tbilisi: Sabchota Sakartvelo. 214 pp., 1982 [esp. pp. 108-113]. Мережко, Смык [Merezhko & Smyk], *Флора Грибов Украины. Диапорталъные Грибы* [*Fungal Flora of Ukraine. Diaporthalean Fungi*], Kiev: Naukova Dumka. 216 pp., 1991 [esp. pp. 51-52].

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[Numbers in brackets, e.g. (62, 5055), refer to abstracts in the Review of Plant Pathology]

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