Short Communication

REPRODUCTION BY MULTILATERAL BUDDING OF TWO STRAINS OF *KLOECKERA CORTICIS*

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The yeast anamorph-genus *Kloeckera* Janke (Type species: *K. apiculata* (Reess emend. Klöcker, Janke) and its teleomorphic genus *Hanseniaspora* Zikes are characterized by bipolar budding which leaves broad scars (1–3). This bipolar budding is comparable to formation of holoblastic conidia in basipetal succession on percurrently elongating cells (3, 4). However, reproduction by multilateral budding was observed on two strains belonging to *Kloeckera corticis* No. 983 and 991. These strains were isolated from botrytised grape and identified by the author. Characteristics of both yeast strains agreed well with the standard description of *Kloeckera corticis* (Klöcker) Janke (1), with the exception of their multilateral budding.

The slide culture was used for observation of multilateral budding. YM medium composed of polypeptone 5 g, malt extract 3 g, yeast extract 3 g, glucose

Fig. 1. *Kloeckera corticis* No. 982.

Bipolar and multilateral budding cells under aerobic conditions in slide culture using YM medium.

15 g, agar 15 g, and tap water 1,000 ml, and potato-dextrose agar (PDA, Difco) were used. The plates were incubated at 25° for 1 to 7 days.

The two strains of *K. corticis* reproduced not only by bipolar budding but also by multilateral budding in both media, *i.e.*, YM and PDA. In addition to the usual bipolar budding, several buds, *viz.*, three, four and five buds, developed

Fig. 2. *Kloeckera corticis* No. 991.

Time-lapse sequence of conidium ontogeny showing the succession of lateral buds: 1st conidium (1, 1') arising from the lateral position; 2nd (2, 2') and 3rd (3) conidia arising from the same place as 1 and 1', respectively.

Fig. 3. *Kloeckera corticis* No. 983.

Time-lapse sequence of conidium ontogeny showing the succession of polar and lateral buds.

at different places on a single yeast cell (Fig. 1). The multilateral budding was observed on the yeast cells both aerobically and under a cover slip in slide culture. Figures 2 and 3 showed that the lateral budding and the daughter-cells may be formed in basipetal succession presumably with annellation in *K. corticis* No. 983 and 991. Now in progress are further detailed studies on the conidium ontogeny in *Kloeckera* spp.

K. apiculata K 404 (5) did not show multilateral budding. This finding is interesting as regards the discrimination of the yeast genera *Kloeckera* and *Hanseniaspora*.

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