

RIPENING DEGREE OF THE MUSTS AND FERMENTATION VIGOUR OF *Hanseniaspora guilliermondii*

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The yeast *Hanseniaspora guilliermondii* produces in the wines high amounts of acetic acid, about 1 g/l, and rather low values of ethanol, at most 9 vol. %. Its fermentation vigour changes a lot from must to must, but remains always lower than *Saccharomyces cerevisiae* and upper than *Kloeckera apiculata*. In this research it has been studied the relations between the ripening degree of grapes and of musts and the fermentation vigour, with or without SO₂, of *H. guilliermondii* and *K. apiculata*. We also have investigated the causes of the high frequency of *H. guilliermondii* in the musts of the southern Italy obtained from withered grapes and from yielded grapes in coastal areas, rather than in hilly zones.

Ninety-seven strains of *H. guilliermondii* and thirty-five strains of *K. apiculata* have tested, by comparison with *S. cerevisiae* strain n. 404. Three musts from Calabrian grapes and one from Sicilian grapes, with a different ripening index (RI) and with or without addition of 100 mg/l of SO₂, have been inoculated with the strains, after 3 days of incubation at 25°C. All the musts have been acidified with diluted sulphuric acid until a pH of 3.00 and added up with D (+) glucose monohydrate until 30% of total sugars.

In the must obtained from grapes with a lower ripening index (2.80) the fermentation vigour after two days oscillated, for *H. guilliermondii*, from 0.7 to 2.0 g, with an average of 1.3 g; instead, with addition of 100 mg/l of SO₂, the fermentation vigour oscillated from 0.0 to 0.3 g, with an average of 0.1 g. In the must with a higher ripening index (4.93) the values oscillated from 1.9 to 3.4 (average 2.8) and from 0.0 to 3.0 (average 1.9). In the others two musts, with intermediary RI, the values have been intermediary too. For *K. apiculata*, the differences of fermentation vigour are smaller: in the first must the values oscillated from 0.3 to 0.9 g, with an average of 0.7, in the second, from 1.3 to 1.8, with an average of 1.6. With 100 mg/l of SO₂, instead, the values are almost identical: in the first must, they oscillated from 0.0 to 0.4, all the strains were at 0.0 in the second.

The ripening degree of the musts influence the growth of *H. guilliermondii* independently of sugar concentration and of pH, which were identical for each must. In the musts with higher ripening index, richer, therefore, in aminoacids and vitamins, this yeasts have a very high fermentation vigour and they are SO₂-tolerant also with doses of the antiseptic otherwise inhibitory. However, in the musts with lower ripening index all the strains had fermentative values next to zero in presence of SO₂. In this research it has been demonstrated that *H. guilliermondii* has a peculiar aptitude to develop in musts yielded in the hottest territories of the southern Italy, resisting very well, in such conditions, to the inhibitory effect of the SO₂. It is interesting to note that all the strains of *K. apiculata* are always inhibited by 100 mg/l of SO₂ at pH 3.00.

Key words: *Hanseniaspora guilliermondii*, fermentation vigour, grapes ripening, sulfur dioxide resistance, frequency in the musts.