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RESEARCH ON SUGARING AND BROWNING OF STORED DRIED FIGS

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Besides some other products, dried figs belong to the most important national agricultural export products of Turkey. According to FAO statistics, Turkey exported approx. 52,500 tons dried figs to the value of approx 105 million US\$ in the year 2005. The matured Turkish figs of the kind 'Smyrna' are usually harvested at the beginning of September and dried in the sun after a washing process. Afterwards, they are sorted by hand and packed in cardboard boxes. To control possible pest infestation, organically produced ("bio") figs have to be treated with CO₂ under high pressure or under vacuum. The German dried fruit industry imports the treated dried figs by container into Germany and stores it over several months at 15°C and at 65 % relative humidity. During the storage in Germany, the visual quality of dried figs deteriorates. Within a few months, white sugar crystals appear on the skin of the figs ("sugaring") and the colour of the figs changes from typical yellow to brown ("browning"). This study aims to determine the physical reasons of the sugaring and browning, which are already recognized by USDA as quality damages. It is known that the relative humidity and the temperature are important quality-determining factors during the storage of dried figs. In the project, dried figs were stored at different climatic conditions, in order to test the effect of high and low temperature on the sugaring and browning at three different relative humidities. 800 g dried figs were stored up to 8 weeks at 5°C and 25°C, respectively, as well as at 20%, 65% and 90% relative humidity, respectively. The relative humidity of the air used for purging through Dresser flasks with the figs was adjusted by use of saturated salt solutions. By five panelists sensory tests were carried out with the dried figs for sugaring grade, browning index, visual status, flavor, texture and aroma. Moreover, their pH values, the content of citric acid, dry matter, Bricks and L* a* b* color-system were analyzed in the laboratory. The results showed that 65 % r. h. at 5°C were the most advantageous condition for dried figs for 8 weeks of storage. The low relative humidity of 20% and also the higher one of 90% were totally insufficient to prevent sugaring and browning in dried figs at the investigated temperatures of 5°C and 25°C, respectively. Further research is necessary to investigate the potential for use of modified atmospheres for dried figs.

Key words: Dried fig; Turkey, sugaring, browning, relative humidity

