

Duenchay Tunnarut 2011: Effect of Sodium Metabisulfite at Low Concentration on the Quality of Chili Powder during Storage. Master of Science (Agro-Industrial Product Development), Major Field: Agro-Industrial Product Development, Department of Product Development. Thesis Advisor: Associate Professor Rungnaphar Pongsawatmanit, D.Agr. 105 pages.

Chili powder is a favorite ingredient used in food product for seasoning. In food industry, quality of chili powder is important for the acceptance of consumers. Therefore the objectives of this study were to survey consumers' awareness and expectation on the quality and safety of chili powder, to determine the effect of sodium metabisulfite at low concentrations on the quality of chili powder and finally to study the quality changes of chili powder kept at different temperatures during storage. Most of respondents (n = 70) from the survey for dried chili expressed willingness to pay a higher price for higher quality and safety about 5-10%. The chili powder respondents (n = 220) with more than 50% indicated that they purchased the chili powder packed in transparent plastic. The respondents indicated that they did not agree (50%) that most consumers had enough knowledge about the quality and safety of chili powder. The respondents agreed (54.5%) and strongly agreed (37.7%) that appropriate packaging and storage condition could maintain quality of chili powder. Seventy percent of respondents expressed willingness to pay a higher price about 5-10% for higher quality and safety of chili powder. Thirty samples of chili powder were purchased from various sectors in food chain for quality determination. The chili powder qualities available in wholesale and retail markets were fluctuated from about 3 to 9% moisture content and 0.25-0.62 a_w . Since the limitation of sodium metabisulfite ($\text{Na}_2\text{S}_2\text{O}_5$) application in food products, soaking chili pod for 30 min in low concentrations of $\text{Na}_2\text{S}_2\text{O}_5$ solutions (100, 150 and 200 ppm) were carried out before blanching at 100°C 3 min, drying at 65°C 11-12 h and grinding. The L^* values of chili powder obtained from soaking in $\text{Na}_2\text{S}_2\text{O}_5$ kept at 40°C exhibited the higher values than those soaking in solution without $\text{Na}_2\text{S}_2\text{O}_5$ whereas the L^* values of chili powder packed in aluminum bags were higher than those packed in plastic bags ($p < 0.05$). Total color difference values (ΔE^*) of chili powder with soaking in $\text{Na}_2\text{S}_2\text{O}_5$ solutions kept at 40°C were lower than those without $\text{Na}_2\text{S}_2\text{O}_5$. When the storage quality of chili powder prepared from soaking in 200 ppm $\text{Na}_2\text{S}_2\text{O}_5$, blanching, drying, grinding and packing in PP and nylon bags were investigated, the a_w and moisture contents of the product in both packages exhibited higher values with increasing storage temperatures, especially at 40°C. The color parameters (L^* a^* b^*) decreased whereas ΔE^* increased with increasing storage temperatures indicating color change of chili powder could be minimized using lower storage temperatures. However, qualities of chili powder packed in nylon bag were better than those packed in PP in terms of moisture and color.

Student's signature

Thesis Advisor's signature