





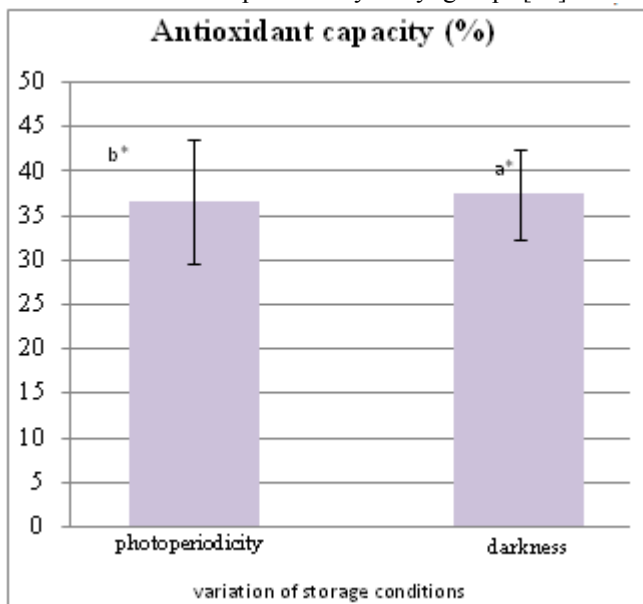






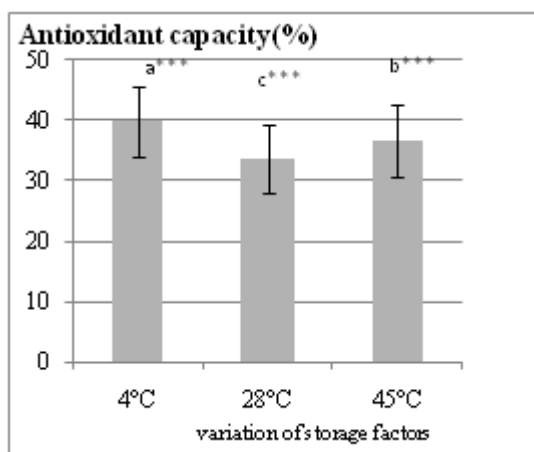


absorbance The color change of DPPH methanolic extract in the presence of each of the test products was measured at 517nm. The results presented in the figure 13 described the percentage of antioxidant capacity of paprika for free radical DPPH. The high potential of polyphenols to scavenge free radicals is due to their phenolic hydroxyl groups [55].



**Figure 13:** Effect of darkness and photoperiodicity on the antioxidant capacity of paprika with means comparison (ab),  $P < 0,0104^*$  (Test of Duncan)

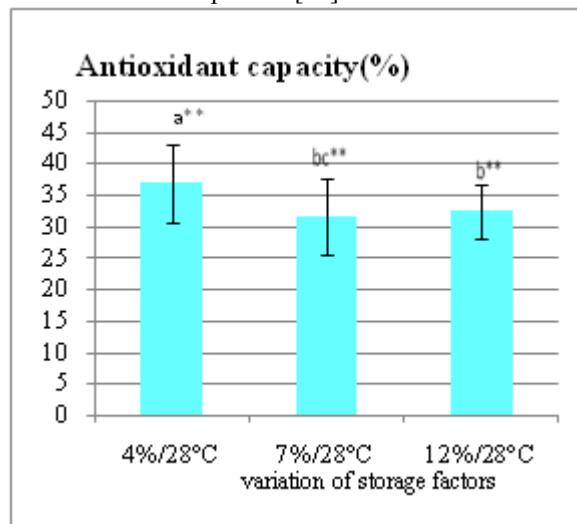
DPPH was commonly used for evaluating the radical scavenging activity. The radical scavenging activity of the paprika extracts was analyzed by the DPPH assay, and the results were presented as %. The powder of red pepper has an antioxidant 45.25% power but during storage the initial value deteriorates (figure.13). The results showed that the antioxidant power reductions are less significant ( $p < 0.0104$ ) for both samples at the 5% level. The antioxidant power of samples due to photoperiodicity experienced a remarkable decrease.



**Figure 14:** Thermal effect on the antioxidant capacity of Paprika with means comparison (abc),  $P < 0, 0001^{***}$  (Test of Duncan)

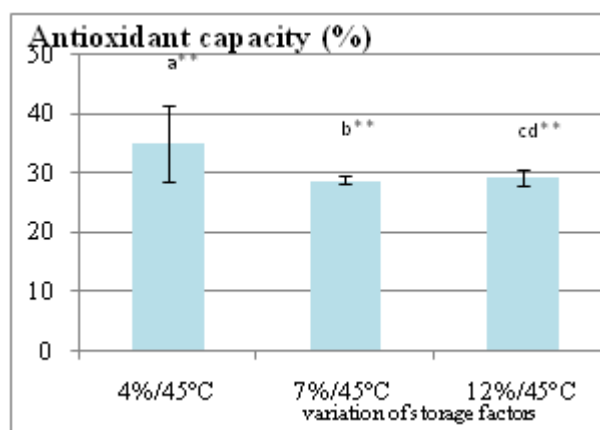
The antioxidant capacity of samples reported a highly significant reduction ( $p < 0.0001$ ) with a significant difference at the 5% level (figure.14). We can state that there

is a positive and significant relationship between the decrease in antioxidant capacity and the storage temperature correlation. This correlation is more significant and positive for the samples stored at 28°C. In other published works it was demonstrated that technological procedures to which vegetables are subjected prior to their consumption may affect qualitative and quantitative changes in their chemical compositions. Similarly, the polyphenolic compounds and their antioxidant activity are strongly dependent on the technological treatments and it is expected that hydrothermal processes contribute to their losses. Knowledge of the factors and their impact on the content of phenolic compounds in vegetables may lead to the selection of technological processes which allow the most optimal retention of these components[56].



**Figure 15:** Effect of moisture at 28°C on the antioxidant capacity of Paprika with means comparison (abc),  $P < 0, 0019^{**}$  (Test of Duncan)

DPPH radical scavenging capacities of the dried peppers at 28°C were in the range of 32–37%.The drying oven (28°C) with a moisture content of 4% peppers gave the highest DPPH radical scavenging activity.



**Figure 16:** Effect of moisture at 45°C on the antioxidant capacity of Paprika with means comparison (abc),  $P < 0, 0019^{**}$  (Test of Duncan)

The antioxidant capacity of samples with water content of 4, 7 and 12% experienced a significant decrease ( $P < 0,0019$ ) of the antioxidant capacity at the 5% level (figure 15 and 16). Those with water content of 7% recorded the most

significant deterioration of antioxidant capacity. The high temperature, 45°C, did not negatively affect the antioxidant activity of pepper during oven drying. Similar results have been reported by various researchers such as [57] who reported a significant increase in antioxidant activity of apricots from Cafona variety after air drying at 75°C. In other works, it was reported an improved antioxidant activity of the red curry powder after thermal treatment [58], [59] and that sun-drying cause significant increases in the antioxidant properties of the green leafy vegetables [60]. However, it was mentioned that the cooking affect highly the color of pepper as reported by [39].

It was previously reported that long dehydration times together with high temperatures [8] lead to poor quality products due to caramelisation, Maillard reactions, enzymatic reactions, pigment degradation and l-ascorbic acid oxidation [60].

The sensory evaluation assessed by photosensitive molecular of minimally processed sweet pepper through the 12 weeks storage period, showed a good correspondence with changes of tested parameters. In addition to texture modifications, due to synergistic action of pectinase enzymes which also influenced the overall acceptance, the color changes on a weekly basis confirmed a higher potential suitability to storage of red pepper [61]. reported that modified drying, which is short time and low temperature drying of cut red pepper pods, was certainly more effective than conventional drying in reducing the destruction of the antioxidant activity, ascorbic acid and color.

#### 4. Conclusion

The results of our study supplied detailed information regarding the physicochemical of red peppers (*Capsicum Anuum L*). It has been demonstrated the effect of thermal processing on the antioxidant capacity of flavonoids. The flavonoids are thermal sensitive. In addition, their antioxidant capacity varies but not proportional to the degradation of the flavonoids. Degradation products flavonoids play an important role in the biological properties of the solution after heat treatment. A storage at 28°C and 45°C induced changes on the physico-chemical parameters of pepper *Capsicum Anuum L*, but not as important as a storage at 4°C

The results showed a significant decrease ( $P < 0.0019$ ) of the antioxidant capacity of stored samples during storage with a significant difference at 5% level. The decrease in the antioxidant capacity of the samples with a moisture content of 7% is more important than those with a moisture content of 4% and 12%. Consequently, the antioxidant capacity of samples is influenced by the storage conditions compared to the initial value of the antioxidant capacity of paprika 45, 25 % had a significant decrease ( $p < 0.0104$ ,  $p < 0.0001$ ,  $p < 0.0019$ ) over time with a significant difference at the 5% level. In conclusion the decrease is less important for the samples stored at a temperature of 4°C in the darkness conditions against by decrease are important for the hydrated samples and stored at 28°C and 45°C under light exposition. Certainly, some additional agronomic, cultivating, technological, microbiological, physico-chemical and enzymatic factors (e.g. role of pectinases in product softening) could have a role in keeping the quality of fresh-

cut sweet pepper. Knowledge of the factors of storage and their impact on the content of phenolic compounds, and antioxidant activity scavenging in red pepper may lead to the selection of technological processes drying and storage conditions, which allow the most optimal retention of these components. The information obtained in the present study finds its practical application because it showed the behavior of the jam during the period separating the production from the consumption. The results shown in this work may open new perspectives in the study of pigment stability. It would be interesting to investigate the possible influence of carotenoid content on capsaicine and capsaicinoid stability on the one hand, and the other hand, our results would contribute to the controversial literature about the impact of technological process on healthy compounds in food and to promote the consumption of these two traditional bell pepper

#### 5. Acknowledgment

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