

The Effect Of Storage On The Nutritional Value Of The Selected Fruits

Miraj Uddin

Bachelor Science Chemistry, Malakand University

Email: Mirajbjr004@Gmail.Com

ABSTRACT

The research was carried out on "The effect of storage on the nutritional value of the selected fruits" at the department of chemistry Govt. Post Graduate College Khar university of Malakand. Peaches were purchased from the market and stored for 15 days at cooled storage, with relative humidity. Physiochemical analysis in the fruits was determined at 5 days intervals of time during storage. Red peach had highest percent juice content (56.53-42.6%) and in white peach (55-48.9%), high weight loss in red peach was (0-10.8%) and white peach (0-9.8%), highest Total Soluble Solid 12.6 (Brix) recorded in red peach, greater ascorbic (6.1-2.9%) was found in white peach while in red peach (5.8- 3.6), percent acidity in red peach (0.67-0.32) and white peach (6.1-2.9), highest sugar acid ratio (25.92-12.98%) was recorded in red peach, while (27.3125-13%) recorded in white peach. Highest total sugar (7.4-6.3%) was recorded in red peach, while (7.2-6.2%) was recorded in white peach and both got the highest score in sensory as well as physiochemical analysis. Percent weight loss, Total Soluble Solid was increased with increase in storage duration while percent juice content, ascorbic acid, and percent acidity was decreased in storage duration.

Introduction

Desiccation of fruits and vegetables has been an abiding and lingering problem throughout the world. As compared to cereal grains and certain vegetables such as onion and potato, fruits are spoiling briskly. This rapid spoilage is due to the action of several external and internal agents such as microorganisms, enzymes or oxidation state. Great loss is occurring due to rough methods of handling, improper transportation and poor storage of the fruit. The planter and trader have been waiting for method and ways to store the fruits so that it be marketable after passage of considerable time, the nutritional value of the fruits are greatly affected and very little remains of the original fresh fruit Gayaneh Kyureghian et al., (2010) have gone through extensive and meticulous study on the effect of processing and storage of the vegetable and fruit, particularly its effect on vitamin C content. The peach (*Prunus Persica*) is a popular fruit in the worldwide due to It is soft, round, slightly Furry with sweet yellow flesh and pinky-orange skin, coloration highly sweetness, desirable flavor and nutritional value (Fa S.B.N et al., 2001). It is grown throughout the warmer regions both the northern and southern areas. Peaches are widely eaten fresh and are also baked in pies. Peach contain moisture 86.9 g, protein 0.7 g, fat 0.2 g, carbohydrate 11.4 g, fiber 0.9 g, calcium 7 mg, 11mg iron, phosphorus 24 mg, zinc 0.1 mg, thiamine 0.02 mg, riboflavin

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

0.04 mg, niacin 0.7 mg, ascorbic acid 9 ng, beta carotene 59 mg of 100 g of edible portion (Arlington, Virginia., 2000). Unfortunately, peach fruit is generally characterized by high resistance and relatively short life storage owing to rapid ripening and senescence, excessive softening and decay. Typical peach storage temperature is 0°C to 1.7°C. At that temperature peach will minimize a gradual sinking and wasting away a body resulting from internal browning and retard, moisture loss and spoilage (Crisosto C.H et al., 2008). Refrigerated storage is therefore used to extend the life of peach, but extremely quick decay and sensitivity to chilling injury at prolonged openness to temperature below 10°C or more under 2.2-7.60°C. Peaches are reducing consumer and acceptance and short commercial life (Crisosto C.H et al., 1995). About one third of the world's food is lost during its transportation to the consumer by spoilage and insect infestations. In developing countries, 50% of the world's food is lost due to tropical weather conditions (Ihsanullah et al., 2008). During the past decade, the production of peach fruit has gained perceptible momentum worldwide, mainly because of the availability of low-chill cultivars and improved postharvest management practices (Irfan et al., 2014). About 200 B.C the peaches were obtained from the wild form of China. The Romans were growing peaches about the time of Christ. They increased the production of peach throughout Europe, from where it was spread all over the world (Agri. Stat. of Pak. 2009). Peach is one of the most important fruit grown in Pakistan. Specially, in Khyber Pakhtunkhwa peaches are grown in Peshawar, Swat, Hazara, Chitral, Gilgit, Hunza South and Northern Waziristan, peach is tremendously important fruit of Khyber Pakhtunkhwa, but its production is wasted due to insufficient preservation facilities of our province (Ahmed et al., 2007). In Pakistan the total area under cultivation of peach is 15774 hectares with a total production of 83670 tons in 2009-2010. In this regard Punjab shares 83, Khyber Pakhtunkhwa 6191 and Baluchistan 9500 hectares with an annual production of 474, 57834 and 25362 tons respectively (Ali et al., 2011). However, fruits as agricultural products have a special characteristic of perishable and short shelf life. Furthermore, producer has to know several factors that influence quality distribution and supply chain of these products. On the other hand, growths of supermarket that sell fresh fruit give an opportunity and challenge to supply high quality fruits in supermarket. Also, practical lifestyle of the consumer and their considering with healthy food from the fresh fruits increasing fruit consumption, Consumption of fresh fruit can be supplied by minimally processed food and this product was growth and more popular and increasing in demand. Fresh-cut fruit was one of the popular product from minimally processed that applied through peeling, cutting and shredding where these product was stored in controlled room temperature in the supermarket and non-controlled temperature in the street fruit seller (Syamsir and Elvira 2010). Storage conditions in tropics for fresh-cut products are important and essential for quality and shelf-life of the products. Main objectives for storage of fresh-cut products are to control transpiration rate and respiration rate, protect from disease, loss of nutrition, and minimize contact with pathogen and other unfavorable change in chemical and microbiological aspects. These changes of the products relatively affected structure, composition, biochemical and physiological of their products and good management in temperature during storage conditions will decrease and minimize mechanical damage or physiological malfunctions to maintain

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

optimal conditions of fresh-cut fruit which choose by the consumer (Wills et al., 2010). Fruit aroma and taste are the result of a special assortment and mixture of different metabolites. While sugars and acids contribute to sweetness and tartness, aroma is derived from combinations of volatile molecules. The different proportions of the volatile components and the presence or absence of trace components often determine aroma properties. The flavor of cultivated strawberries is mainly determined by a complex mixture of esters, aldehydes, alcohols, and sulfur compounds (Ancos et al., 2000). The postharvest life of fruit and vegetables has been traditionally defined in terms of visual appearance (freshness, color, and absence of decay or physiological disorders) and texture (firmness, juiciness, and crispness). Although this concept involves aesthetic appeal and mechanical properties associated with quality, it disregards flavor and nutritional quality. Flavor plays an important role in consumer satisfaction and influences further consumption of fruits and foods in general (Cheng et al., 1991). Interest in the role of antioxidants in human health has promoted research in the field of horticulture and food science to evaluate fruit and vegetable antioxidants and to determine how their content and activity can be maintained or even improved through crop breeding, cultural practices, and postharvest storage and processing. Preharvest factors, such as genetic background and cultural practices, have the potential to influence antioxidant capacity in crops. Strawberry fruit from a hill plasticulture system consistently had higher flavonoids content and antioxidant capacity than fruit from plants grown using the matted row system (Hakkinnen et al., 2000). As the demand for healthier products has increased, the range of various fruit products that are available to consumers has also increased. Due to the low temperatures used during processing, freezing could theoretically prevent nutritional loss during storage. However, the literature is sometimes contradictory regarding the effects of freezing temperatures and storage conditions on the bioactive content of frozen fruit products and needs further clarification. As we demonstrate throughout this review, these discrepancies result from the wide range of processing conditions used for freezing, storage, and thawing of fruits and their products, in addition to pretreatments and the intrinsic characteristics of the fruit. This review aims to discuss the influence of freezing on the quality of fruit products and the potential implications of preharvesting conditions on the freezing performance. First, we provide a description of the effects of low temperatures on the physical and chemical qualities of frozen products, with emphasis on the photochemical content, followed by the influence of pretreatments on the quality of the frozen fruits. We then describe some of the effects of preharvesting conditions on the quality of the harvested fruit and the implications for the freezing process. Finally, we discuss the challenges of freezing fruit products for the food industry, emphasizing the impact on shelf life and health claims. Microbial quality will be addressed in a general way under the chemical modifications section. Fruits and vegetables form an essential part of a balanced diet. They are important part of the world agricultural food production, even though their production volumes are small when compared with grains. Fruits and vegetables are important sources of digestible carbohydrates, minerals and vitamins, particularly vitamins A and C. In addition, they provide roughage (indigestible carbohydrates) which is needed for normal healthy digestion (Anon. 2002). Vegetables are good sources of carbohydrates, vitamins and

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

minerals and are considered a staple source of stew and soup ingredient in Nigeria. The quality of a good shelflife of vegetables is related to some biochemical processes that take place after harvest. Physiological actions such as respiration involves heat emission of heat resulting in temperature increase, and this accelerates metabolic processes and decay phenomena (AOAC. 1990). Antioxidants are bioactive molecules, naturally occurring in many fruits that are capable of inhibiting the oxidation of other compounds. They have been implicated in protective biological effects against degenerative diseases (AOAC 1990). As smoothies contain a mixture of intracellular contents from the different fruit components, the mixture may exhibit very different biochemical behaviours to those of their individual components. While most authors have reported that high hydrostatic pressure (HHP) helps retain antioxidant activity of individual fruits, we recently reported that retention of ascorbic acid, antioxidant and polyphenols contents in high hydrostatic pressure (HHP) processed smoothies was no better than for thermally processed samples (Artes., et al 2007). The ripening process of peach, like other climacteric fruits, is characterized by rapid increases in the rates of cellular respiration and ethylene production. (Liguori et al., 2014). Baluchistan and the northern areas of Pakistan are considered peach hubs (Khalil et al., 2014). The ripening process of peach, like other climacteric fruits, is characterized by rapid increases in the rates of cellular respiration and ethylene production (Liguori et al., 2004). That in turn causes substantial losses in the quality, including firmness and thus, is responsible for the shorter postharvest shelf life of the fruit. This ripening behavior of peach fruit epitomizes some serious constraints for efficient management practices such as postharvest handling. storage and transportation. In addition to other strategies, pre-conditioning, intermittent warming. controlled atmosphere storage and the use of semi-permeable/biodegradable coatings are some of the common postharvest practices used to maintain the quality of peaches and extend their postharvest shelf life (Bakshi & Masoodi, 2005). However, many of these practices are associated with undesirable traits of fruit quality such as chilling and/or CO₂ injury, production of ethanol and off-flavor taste due to fruit respiration under anaerobic conditions (Khan et al, 2008). The postharvest quality of peach fruit is generally maintained by low-temperature storage. However, it causes chilling injury (CI) to the fruit (Bakshi & Masoodi, 2003), which further results in wooliness, internal browning and softening of the fruit and makes it more perishable and prone to decay (Gonzalez- Aguero et al., 2008). In addition, the seasonality of many peach cultivars dictates their storage for an extended period of time (Lurie & Crisosto, p. 2005). Its short juvenile period (2-3 years) and the ease of obtaining controlled crosses have made peach breeding programs quite successful: around 1,000 new cultivars were released during 1991-2001 (Strada G.D 2001). In addition to peach because of its small genome size and the simple genetic basis of many morphological and economical traits (Bielenberg D., 2009).Postharvest quality of peach fruits is greatly affected by several pre-and postharvest factors. Climacteric peach fruits face a critical period after harvest and being highly perishable fruits are subjected to rapid deterioration. Generally, the magnitude of postharvest losses in fresh fruits and vegetables is extraordinarily high resulting in proportionately higher economic losses than that of preharvest losses (Abbasi, 2010). Surface treatments protect fruits tissues from decay and also wash off enzymes and substrates released or oozed out from

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

damaged cells. Dipping treatments in a solution, keep intact fruits from outside (surface) and retard infections and deteriorations that harmfully influence life and quality of a produce. Therefore, after harvest, it becomes necessary to keep peach fruits quality intact by using different treatments. Peach fruit are enriched with ascorbic acid, carotenoids (provitamin A), phenolic compounds and are considered prime sources for antioxidants (Abbasi N. K., 1998). Researchers are in struggle to find natural alternatives to synthetic chemicals in order to minimize bacterial and fungal growth in minimally processed fruits (Abbasi et al., 2006) and to increase the overall keeping quality of fruits (Abbasi et al., 2010), during postharvest storage having a concentrate of interest for researchers. Food grade phytochemicals or phenolic compounds are typically used for maintaining postharvest quality. Such methodologies also include cold storage (Akbulak et al., 2004). Control atmosphere storage (Akhtar et al., 2010).

Aims and Objectives

- To evaluate the nutritional changes during and after storage of peach fruit.
- To evaluate the quality and storage life of selected fruit.
- To determine physiological disorders and quality deterioration in peach after storage

Literature Review

According to this study we are able to study the sensitive nature of peaches. They no longer keep it great after harvest for a prolonged time. With a purpose to expand the shelf life of peaches to satisfy patron demand, many methodologies inclusive of treatment of fruit with hot water play a key role in influencing fruit ripening approaches. The take a look at of warm water treatment impact fruit fine and storability of peach fruit, healthy and ailment free peach fruits had been dipped in hot water at various temperatures (30, 40 and 50 oC) for five minutes and stored for diverse storage durations (0, 10, 20 and 30 days). The consequences disclosed that hot water treatment (10 to 50 oC) drastically raised general soluble stable ratio, general sugar and reduced titratable acidity and ascorbic acid content material of peach fruit. While increasing hot water remedy up to four hundred C, notably improved fruit firmness and reduced weight reduction and percent sickness incidence of fruit. Further, overall soluble strong, general sugar (%), TSS/TA ratio, weight loss increased, even as fruit firmness, titratable acidity and ascorbic acid decreased in freshly harvested peach fruit to fruit stored for 30 days (Intizar Ahmad et al., 2020). We know from the conducted study the effects of salicylic acid (C₇H₆O₃) on postharvest life and quality of peach fruits, four different concentrations (0.5, 1.0, 1.5 or 2.0 mmol L⁻¹) were applied to peach fruits ev. Flordaking. Fruits harvested at commercial maturity were washed, dipped for five minutes in SA solutions and stored at 0°C with 90% relative humidity RH on the same day for a period of five weeks. Lower SA concentrations did not offer any significant effect on quality parameters of peach fruits when compared with control. However, SA at 2.0 mmol L⁻¹ concentration significantly exhibited less weight loss, higher flesh firmness, increased SSC, higher TA contents, higher skin luminosity and decreased values compared with other treatments including control. Consequently, SA at 2.0 mmol L⁻¹ concentration also showed a significant increase in ascorbic acid and total phenolics content while, relative electrical conductivity was reduced during five weeks

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

of storage. Thus, the present results suggest that SA at 2.0 mmol L⁻¹ concentration could be used commercially to preserve peach fruits for up to five weeks without any spoilage (Muhammad Javed Tareen et al., 2012). According to this research with increased production, the peach fruit has become one of the most popular stone fruits in Pakistan. Swat, Pakistan's largest peach-producing region, is located in the northwestern corner. During harvest, temporary storage, and transport to market, significant fruit losses occur. The purpose of this study was to see how effective salicylic acid (SA) was at various concentrations (0, 0.5, 1.0, 1.5, and 2.0 mmol L⁻¹) on the postharvest life of 'Flordaking' peach fruit SA was applied to the fruits as soon as they were picked and Kept at 0 degrees Celsius for 5 weeks during the five weeks of storage, all of the (SA) concentration resulted in greater superoxide dismutase (SOD), catalase (CAT), and peroxidase (POD) activity. The 2.0 mmol concentration the maximum activity was seen with SA concentrations (Muhammad Javed Tareena et al., 2012). According to the conducted study the extraction of pectin from peach pomace held at 3 °C and 95 percent RH for 10 months was done at 60 and 80 °C in acidified solutions in the 1.20-2.53 pH range for 10 to 80 minutes. The kinetics of extraction were investigated, and pectin yields from fresh and preserved pomace were compared under the same temperature, pH and time conditions. The intrinsic viscosity and degree of esterification of chosen pectin samples from preserved pomace were investigated and compared to the intrinsic viscosity and degree of esterification of pectin samples from fresh pomace comparable samples previously isolated from fresh pomace (1999). Industrial product quality pectin produced from peach pomace at various pH and temperature conditions.. Finally, a quality index for each sample was obtained to allow an analysis of the effect of storage on the quality of the extracted pectin (J. Pagan et al., 2001). From the conducted study we are able to know chilling injury (CI) incidence and quality indicators in peaches stored at 0°C, 2°C, 5°C, and 8°C for 28 days were investigated in order to assess the impact of four different temperatures on the quality of the fruit. Maintaining the quality of the 'Okubao' peach The 'Okubao' character's extreme susceptibility, significant woolliness and degradation confirmed peach to CI at 5 °C. After one to two weeks of storage at 5 °C, peaches exhibit observable CI symptoms. Weeks but storage at 8 °C resulted in much decreased woolliness, the temperature at which the highest rate of decay was found. Minimum loss of weight and firmness, optimum sensory quality were obtained by the prolonged storage at 0 °C 0 °C was the most effective treatment in alleviating chilling injury (Lijun Sun et al., 2018). We know from the concerned study the physiochemical changes of fresh-cut melon and papaya on various storage and shelf-life evaluation of products. Fresh-cut melon and papaya were kept at different storage temperature conditions with observations on physical characteristics of texture and color of their flesh and measurements of chemical characteristics on water content, sucrose content, acidity, vitamin C, and total carotene. Physical and chemical changes were observed on fresh-cut melon and papaya under different storage conditions. Fresh-cut products stored in lower temperatures of +14-15 °C had optimum shelf-life of 4 days for melon and 3 days for papaya (Mohammad Affan Fajar Falah et al., 2015). Researchers study the fruit and vegetables are critical sources of digestible carbohydrates, minerals and vitamins, particular vitamins A and C. The samples of orange and tomato end result used for this examine

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

were stored inside the pot-in-pot evaporative cooler for 21 days during which assessments finished to quantify a few dietary parameters of moisture, ash, Protein, lipid, nutrition C, carbohydrate and overall sugar contents have been assessed periodically. The observe show that there were continuous decreases inside the best parameters, which include vitamin C content material from 30 to 0.00% for tomato and 7.52-0.49 percent for orange, lipid content from zero 0.22 to 0.00% for tomato and 0.29 to zero.07% for orange, carbohydrate content material from 2.47-4.19% for tomato and 12.23 to 9.53% for orange, protein content for tomato ranged among 0.05 and 0.01% for tomato and 0.18 To 0.04% and total sugar content for tomato ranged from 0.43 to 0.14% and for Sixty 0.65 to 0.25%, while the fee of moisture content material extended from 74.77% and 85.32% for tomato and orange, respectively, with growth in storage duration (Peter Abah Idah et al., 2010). Knowing from the concerned study that the results of freezing and frozen storage on bioactive compounds in Fruit products have not been completely elucidated, and the consequences are often contradictory. Given the huge variety of effects, the goal of this evaluation is to explore the results of freezing, thawing, and storage conditions on the physicochemical quality of products, such as the phytochemicals content. We additionally speak how developing and environmental conditions can affect the freezing method and Product high-quality. Studies show that cultivar selection, preharvest elements, and ripening level are important elements that contribute to the freezing performance and the satisfaction of fruit merchandise (Giovana Bonat Celli et al., 2016). Concerned study shows the storage conditions are vital elements for jam first-class. The goal of this take a look at became to display the physicochemical stability and sensorial profile of apricot jam for the duration of storage for 60 days at 5 C, 25 C and 37 C. For that purpose, unique interest was paid to overall soluble solids (TSS), titratable acidity (TA), Colour, loose amino acids, total sugars (TS) and hydroxymethylfurfural (HMF). The decreasing Parameter for jam on the end of storage under 5 C, 25 C and 37 C, respectively, were 16.Eighty one%, 34.30% And 56.01%, and five.52%, nine.02% and 7.Forty six% for TS; likewise, the increasing were 19.Eighty one%, 22. Ninety four% And 25.07% for TA, 3.15%, 4.08% and 4. Forty seven% for TSS, 15.96%, 112.76% and 150% for HMF. Jam stability was better at 5 C than 25 C and 37 C. The interplay time-temperature thing had vast outcomes on pH, TS, FAA and HMF, not like TA, TSS and sensorial profile (Noureddine Touati et al., 2013). The conducted research shows that the antioxidant capacity, total anthocyanins, total phenolics, aroma Compounds, and postharvest exceptional of strawberry fruit stored at 00C, 50C, and 100C were Investigated. Strawberry fruit stored at 10 C or 5 oC confirmed higher antioxidant ability, overall phenolics, and anthocyanins than the ones stored at 0 oC However, the postharvest life based on average fine changed into longer at OC than at SC or 10C. The manufacturing of aroma compounds became markedly encouraged by way of storage time and temperature. Character aroma compounds had been affected in another way. As an example, ethyl hexanoate, hexyl acetate, methyl acetate, and butyl acetate extended, at the same time three-hexenyl acetate and Methyl hexanoate decreased for the duration of storage. In standard, strawberries stored at 100C or 5oC produced better ranges of these volatiles than those stored at 0 oC In conclusion, strawberries stored at 0 oC retained an appropriate normal great for the longest storage duration; however, berries

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

stored at temperatures better than 0 °C confirmed higher content of aroma compounds and antioxidant Ability during the postharvest period (J. Fernando et al., 2004). The concerned study on the effect of time and temperature at the content of vitamin C, general polyphenols and particular phenolic compounds in addition to the Antioxidant pastime of industrial orange juices was studied. The polyphenols content became determined by the use of Folin-Ciocalteu and HPLC methods. The 2 techniques, SPE versus direct injection following a simple treatment of samples, were in comparison to assess two Strategies of sample preparation. For antioxidant capability dedication, DPPH and FRAP assays had been used. All analyses had been carried out for fresh juices and after storage at 18, 28 and 38 °C for 2, 4 and 6 months. It became observed that vitamin C and free and conjugated hydroxycinnamic acids were the most affected by both duration and temperature of storage. The lower in the content of polyphenols And vitamin C upon storage were reflected by using the lower inside the antioxidant capability of orange juices. Small modifications in flavanone content material had been observed, indicating high stability of those compounds upon storage (Inga Klimczak et al., 2006). Fruit smoothie samples had been thermally (P70> 10 min) or high hydrostatic pressure (HHP) processed(450 MPa/20 °C/5 min or six hundred MPa/20 °C/10 min) and the full antioxidant capacity (FAC), stages of antioxidant organizations total phenols (TP), anthocyanins and ascorbic acid], instrumental colour, polyphenols oxidase (PPO) enzyme activity and dissolved oxygen were examined over a garage length of 10 h at four °C. Thermal processing of smoothies decreased ($p < 0.001$) TAC and TP values, ascorbic acid and L and a shade Attributes (lightness and redness respectively) as compared to sparkling and HHP-450 processed samples. Conversely, it did result in entire inactivation of PPO enzyme, with no activity detected. Of the HHP Treatments, HHP-450 samples had higher ($p < 0.001$) ranges of general antioxidant, phenols and anthocyanins content than HHP-600 samples. But, the latter changed into extra powerful in decreasing ($p < 0.001$) the Endogenous enzyme interest of the smoothies. Ascorbic acid content material degraded over the garage for all Smoothies. HHP-600 samples had excessive preliminary values, which declined slowly over storage, at the same time as thermal Samples had the lowest initial price (zero.5 h) that fell beneath detectable limits via 10 h. Regardless of these facts, less pronounced outcomes were found for storage. No widespread outcomes were determined for overall Anthocyanins and phenolic contents in addition to L and color change (DE) variables. Basic, HHP processing of smoothies at moderate temperatures may be a suitable opportunity to conventional thermal processing (Derek F. Keenan et al., 2011). The study was aimed at forecasting peach area and production in Pakistan using time series data for the period 1997-98 to 2014-15. Peach area and production were forecasted over a period of time 2015-2016 to 2025-26. The Box-Jenkins (1976) approach was applied to forecast area and production of peach. This study found (1, 1, and 0) as an appropriate model to forecast both area and production of peach. The best-forecasted model was determined based on the lowest values of Akaike information criterion, Bayesian information criterion and Hannan-Quinn criterion. However, the predictability power, performance and quality of the model was measured based on the lowest error value of the root mean square error, mean absolute error and mean absolute prediction error. The forecasted value of area and production of peach for the year 2025-26 were worked out

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

as 11.05 thousand hectares and 65.05 thousand tons respectively. The minimum projection trend indicated declining area and production of peach in Pakistan. The author (s) may arrived at the conclusion that peach production can be increased by using improved peach cultivars, improved irrigation system and adequate cultural practices during the course of study in Pakistan. The strategy may be prioritized to bring more barren land under peach cultivation. Expansion of the area under peach would directly increase its production in the future (A. Ullah et al., 2018). From last many years has been characterized via a lower in peach (*Prunus persica*) fruit consumption in many countries, predominant because of unsatisfactory exceptional. The sugar content is one of the maximum critical great trends perceived by way of purchasers, and the improvement of novel peach cultivars with sugar-more suitable content is a primary goal of breeding applications to revert the market inertia. Despite the fact that, the progress available thru classical phenotypic choice is restricted by using the slim genetic bases of peach breeding material and through the complex quantitative nature of the trait, which is deeply stricken by environmental conditions and agronomical control. The development of molecular markers relevant in MAS or MAB has grown to be a critical method to enhance the choice performance. Regardless of the widespread advances in 'omics' sciences, supplying effective gear for plant genotyping, the identity of the genetic bases of sugar-associated trends is hindered by means of the shortage of adequate phenotyping methods which might be able to cope with strong within-plant variability. This assessment presents an overview of the current understanding of the metabolic pathways and physiological mechanisms regulating sugar accumulation in peach fruit, the primary advances in phenotyping strategies and genetic heritage, and subsequently addressing new studies priorities and prospective for breeders (Marco Cirilli et al., 2016). Peach (*Prunus persica* L.) being a capability source of bioactive compounds, has been demonstrated to have medicinal blessings. On this examine variant of minerals and antioxidant characteristics (general 10 phenolic contents, total flavonoids contents, decreasing strength, inhibition of peroxidation the usage of linoleic acid system and DPPH loose radical scavenging hobby) among peel and pulp components of different peach types, specifically Golden, Shireen, and Shahpasand were investigated. The peel and pulp extracts, derived from the types analyzed, exhibited an considerable quantity of overall phenolics (TP) and overall flavonoids (TF), starting from 1,209.3- 1,354.5, 711.7-881. Three mg GAE/a hundred g and 599.785.5, 301.3-499.7 mg CE/a hundred g on a dry weight basis, respectively. Lowering electricity of peel and pulp extracts (12.5 mg/ml attention) ranged from 2.75-2.77 and 1.74-1.91. The inhibition of linoleic acid peroxidation and DPPH scavenging activity of the extracts various from 70.8-eighty Nine% and 66.8-76.5% in peels, and 51.9-60.1% and 43.4-49.1% in pulps. The Mineral evaluation found out that the content of okay changed into maximum in each element of the peach fruit accompanied by Mg. Ca, Fe, Mn and Zn. The effects of our present look at suggest that peach peel had substantially higher tiers of minerals, antioxidant capacity and phenolics than the ones of the pulp, suggesting the consumption of unpeeled peach as a capacity source of high-value components. The peach peel may be a useful as a possible supply of natural antioxidants for purposeful foods and nutraceutical applications (Malecha Manzoor., et al 2012). From the conducted research with few exceptions, nutrient tiers and/or their

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

bioavailability are decreased in foods following harvest, slaughter, or series. Rate of Those losses is commonly attenuated via decreasing temperature of garage. Initial warmness processing to the point of enzyme inactivation, or to the Factor of microbial sterilization, 'Stabilizes' the meals in order that it does now not "destroy" however on the equal time reasons a greater initial discount in positive Vitamins, and a more gradual discount with prolonged storage. Initial Warmth processing and mechanical remedies may also release nutrients So they end up more to be had, but once launched, they're also Situation to losses except stored at low temperatures. Ascorbic acid is certainly the touchiest to loss and changes to a less energetic form because the end results of time and temperature in storage. In Many instances modifications in ascorbic acid reflect standard modifications in first-rate. Thiamine is another vitamin which is regularly affected adversely by the time and temperature of the garage. The A vitamins seem like misplaced conveniently in leafy veggies, however rather unchanged in different ingredients. There is little impact on mineral content of ingredients; however bioavailability, mainly of iron can be motivated throughout extended garage. Large losses in carbohydrates may be encountered due to Respiration hobby in prolonged storage at distinctly high temperatures. Protein context is rarely affected, but protein availability is readily reduced even in low moisture ingredients unless they may be blanketed from Oxygen and saved at low temperatures. Those predicted changes in nutritive value are of particular significance in nutrient labeling, and should be taken into account whilst preparing nutrient labels (Amhud Kramer 1977). Concerned study about the relationship between optical properties and tissue structure of firmness has been investigated. The light absorption (absorption coefficient, α) and scattering properties (reduced scattering coefficient's) of 'Baifeng' and 'Xiahui 8' peaches were acquired using a single integrating sphere (SIS) system combined with an inversion algorithm over a 6 d period at 20 °C. The relationship of α and α 's with the firmness, equivalent diameter (dF), roundness (e), cell wall thickness (CWT) and intercellular space rate (Ris) were quantitatively analyzed at different wavelengths, and prediction models were established by partial least squares regression (PLSR). The results showed that firmness was correlated with structural parameters (except e), especially with Ris and CWT (0.750). In addition, firmness, Ris and CWT had good correlations with optical scattering in melting 'Baifeng' peaches (0.919). Similar results were also found for prediction models of firmness, CWT and Ris based on s (0.799). Moreover, in "no melting 'Xiahui 8' peaches, both firmness and CWT had good correlations with optical scattering (0.976), which is consistent with the correlation analysis results of firmness and structural parameters. In addition, in the models based on s for predicting firmness and CWT 2.823. These results further verified that the prediction of firmness based on optics may be related to the high correlation between tissue structural parameters and scattering properties (Chen Ma et al., 2020). Conducted study about the physiological and biochemical responses in peach fruit (*Prunus persica*) Bayuecui' to two concentrations (1 and 5 mM) of oxalic acid treatment was studied during storage at room temperature (25 C). Slower relative leakage rate, higher flesh firmness, lower respiration, increased activities of antioxidant enzymes (superoxide dismutase, SOD, peroxidase, POD; catalase, CAT; ascorbate peroxidase, APX) and polyphenol oxidase (PPO), and a decreased lipoxigenase (LOX) activity in treated fruit were observed as

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

compared with the control. Moreover, significant decreases in the production of active oxygen species (AOS) (superoxide, O_2 hydrogen peroxide, H_2O_2) and lipid peroxidation in treated fruit were found at the later time of storage. The effects of oxalic acid could therefore contribute to maintaining the membrane integrity and delaying the fruit ripening process. Increased activities of POD, SOD, and PPO might also possibly be of benefit to disease resistance during storage (Xiaolin Zheng et al., 2006). This study about yoghurt supplemented with peach is a dairy product consumed around the world with a shelf-life of ca. 30 days. During this period protein-polyphenol complexes can be formed and have a detrimental effect on the in vivo solubility of both phenolic and proteins. Yoghurt enriched with peach prepare were produced and stored up to 28 days at 2 °C. Total antioxidant activity decreased 24%, total carotenoids increased 66%, while total phenolics remained unchanged during the yoghurt shelf-life. Carotenoids presented significant differences between peach enriched yoghurt and peach prepare stored under the same conditions. After 28 days the zeaxanthin+lutein, β -cryptoxanthin and β -carotene increased 133, 122, and 84% respectively, for peach prepare, while in peach yoghurt they increased 68, 40, and 15%, indicating interactions of carotenoids with matrix components, mainly proteins and fat present in yoghurt. Polyphenols presented higher stability when added to yoghurt with slight variations in their content of ca. 10% for (+)-catechin and 12% for p- coumaric acid, and no variations were recorded in neochlorogenic and chlorogenic acids and in rutin. The α -lactalbumin content decreased 22% after 24 h of peach addition while α -lactoglobulin content did not change. Peach polyphenols were very stable during yoghurt shelflife while carotenoids were the compounds that presented higher interactions with the matrix (Ana Oliveira et al., 2007). The research about the extraction of pectin from peach pomace stored for 10 months at 3C and 95% RH was carried out at 60 and 80C, in acidified solutions in the 1.20-2.53 pH range, for times varying between 10 and 80 min. The kinetics of extraction was studied and pectin yields from fresh and stored pomace under equivalent conditions of temperature, pH, and time were compared. The intrinsic viscosity and degree of esterification of selected pectin samples from stored pomace were analyzed and were also compared with the equivalent samples previously extracted from fresh pomace Quality of industrial pectin extracted from peach pomace at different pH and temperatures. Finally, a quality index for each sample was obtained to allow an analysis of the effect of storage on the quality of the extracted pectin (J. Pagan 2001). The peach industry faces serious economic losses because of the short "green" life of the fruit at postharvest. In the present study, we investigated the effects of putrescine (PUT) application on the quality characteristics, pattern of ripening, storage behavior and shelf life of peach fruit during low-temperature storage. The aqueous solution of PUT (0, 1, 2 and 3 mM) was applied to the peach trees at three distinctive stages of fruit growth and development. The fruits, harvested at the commercial stage of maturity, were stored at 1 ± 1 °C and $90 \pm 2\%$ relative humidity for 6 weeks. The data for fruit firmness, total soluble solids (SSC), titratable acidity (TA), ascorbic acid (ASA) content, rate of ethylene production, chilling injury (CI) index and colour perception were collected at harvest and then on a weekly basis throughout the storage period. The results showed that spray application of PUT significantly reduced the incidence of CI and reduced the rates of fruit

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

softening, loss in fruit weight, SSC, TA, ASA content and fading of skin colour during storage, regardless of the doses of PUT applied, or the time of application. However, the positive effects on the quality characteristics of peach fruit, including CI, were more pronounced with the higher doses of PUT, specifically when applied at 2 mM. In conclusion, CI in peach fruit may be substantially alleviated by the spray application of 1-3 mM PUT during fruit growth without compromising the quality of the fruit for up to 6 weeks in low-temperature storage (Nadeem Akhtar Abbasi 2019). Softening is a developmentally programmed ripening process, associated with biochemical changes in cell wall fractions involving hydrolytic processes resulting in breakdown of cell-wall polymers such as cellulose, hemicelluloses and pectin etc. Various hydrolytic reactions are brought about by polygalacturonase, pectin methyl esterase, pectate lyase, rhamnogalacturonase, cellulase and β -galactosidase etc. Besides these enzymes, expansin protein also plays an important role in softening. Textural changes during ripening help in determining the shelf life of a fruit. An understanding of these changes would help in formulating procedures for controlling fruit softening vis-à-vis enhancing shelf life of fruits. In the present review an attempt has been made to recent findings on biochemistry of fruit softening (Anurag Payasi et al., 2009). The sustainable development goals have been formulated by the United Nations to address global issues including food insecurity around the world. However, in developing countries, like Pakistan, a number of basic factors are the major impediments in implementation of these goals. Surveys were conducted in Peach (*Prunus persica* L.) producing areas of Malakand Division, Khyber Pakhtunkhwa, where peach production, a major income source, is facing a serious decline over the past decade. Peach growers were mostly owners in Swat and Chitral districts whereas growers in the rest of the districts were tenants (60-75%). Highest literacy rate was observed in Swat District, (high school/matriculates 55%), while illiteracy rate was highest in district Chitral (72%). We believe that along with lack of proper education, knowledge about the technology and its use in peach production, growing of decades old cultivars i.e., Elberta (No 6) might be responsible for this production decline. Due to poverty, practice of intercropping is common to maximize their profit. Peach rot and fruit flies are prevalent in all peach growing areas. Thirteen diverse insecticides and 22 fungicides alone or in combination are used to manage this twin menace. The indiscriminate use of agrochemicals i.e., 24-30 sprays per season with no effective results, led us to believe that either the pest or pathogen or both might have developed pesticide-resistances. We conclude that (I) lack of knowledge about pests and diseases, (II) monocropping and use of decade's old cultivars, (III) Lack of awareness about diseases, their ecology and epidemiology, (IV) Lack of knowledge about good phytosanitary practices and v. inability to choose the right pesticide/fungicide for better management are some of the contributing factors behind peach decline. Such situations are common in developing countries where lack of knowledge and awareness of farmers are playing a major role in food insecurity and perhaps in implementations of SDGS (Palwasha et al., 2022). The effect of edible coatings incorporated with essential oils of cinnamon, basil, and thyme with and without sodium alginate, glycerol, and Tween 80 on the physiochemical, sensory, and shelf life of peach fruit were investigated using the multivariate technique. All coatings retarded the changes in fruit as compared to control samples. Combination of essential

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

oils and alginate were more effective as compared to these chemicals alone. Changes in the physiochemical and sensory attributes were slow at the start while rapid toward the end of storage. Total sugars, pH, Total soluble solids, and weight loss showed a positive correlation. Total sugars, TSS, and pH possessed more than 90% similarity while firmness, vitamin C, radical scavenging activity, and sensory attributes had more than 95% similarity. Thyme and alginate incorporated coatings exhibited maximum shelf life. Findings suggest that the essential oil incorporated in edible coatings may enhance the shelf life of peaches (Haris Ayub et al., 2020). In developing countries about half of young children are affected by anemia with about 54% of children aged fewer than five suffering from moderate to severe anemia in Pakistan. The aim of this study was to investigate the community, household and individual level factors associated with anemia among children aged 1-5 years and to estimate the prevalence of anemia. Methods: A community-based cross-sectional study was conducted among children in two peri urban communities of Karachi Pakistan. Systematic sampling method was used. A structured questionnaire was used to collect information on independent variables. The dependent variable was anemia which was measured by Hemacue machine. Binary multilevel logistic regression was used to analyze the data. Results: The prevalence of mild, moderate and severe anemia in 1-5 year old children was 17.6%, 57.7% and 14.8%, respectively. The community level factors found to be negatively associated with anemia were living in neighborhoods with high availability of fruit [Adjusted Odds Ratio (AOR) = 0.3, 95% Confidence Interval (CI): 0.1-0.6], and residing in neighborhoods with high number of meat and dairy product and vegetable shops (AOR=0.4, 95% CI: 0.2-0.9). The household and individual level factors found to be positively associated with anemia were mothers with 4 or more children (AOR = 1.9, 95% CI: 1.2-3.1), younger age (AOR = 2.0, 95% CI: 1.3-3.1) and child not being vaccinated (AOR = 1.9, 95% CI: 1.0-3.6). Conclusion: We found a high prevalence of anemia in children living in two peri urban communities. The public health measures call for improvements in nutrition facilities in the neighborhoods, vaccination of child and reduction in the number of family members (Abid Hussain et al., 2020). The primary aspect of expanding peach adaptability that promotes the maintenance of high quality production standards is the accurate evaluation of variety and rootstock responses to different growth conditions, and the identification of their best combinations. Peach breeding programs are very active in the release of new cultivars that are able to expand cultivation into areas with different climatic conditions particularly in southern areas of Europe (Albas et al., 2004). Concerned study the effects also seen on plant blooming, fruit ripening time and total production. Furthermore, our present knowledge of rootstock effects on peach fruit quality, and particularly on nutritional attributes of the fruits are generally limited. The effects of the rootstock type on the mineral composition and the sugar and organic acid content of the fruit have already been reported (DeJong et al., 2004). In clayey and calcareous soils without a stable irrigation and fertilization system, the type of rootstock can particularly affect both the vegetative and productive properties of 'Suncrest' peach (*Prunus persica* L. Batsch) plants, and the qualitative and nutritional attributes of their fruit. The GF677 rootstock promoted the highest vegetative development, followed by Jr. But similar plant vigour, but the latter rootstock differed in its higher production of

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

pruned wood. The lowest adaptability to these cultivation conditions was observed for which showed the lowest plant development and production. For the plant yield, the 'Suncrest' grafted onto GF677, Julior, Ishtara, and burial were all similar. The fruit yield and both the canopy volume and pruned wood of 'Suncrest' grafted onto Ishtara showed a particular relationship, giving the best indices of yield efficiency and plant physiological equilibrium. Moreover, the same rootstock promoted the largest fruit size, while the smallest fruit were found on GF677. The fruit from the Citation 'Suncrest' ripened 3 days early, while those from Barrier1 had a late fruit ripening. Firmness, soluble solids and the soluble solids to total acidity ratio were only affected slightly by the different rootstocks, while the total acidity of the fruit varied significantly according to rootstock; the fruit from 'Suncrest' grafted onto Barrier, Junior, and Citation had the highest total acidities. The rootstock effects on the nutritional attributes of the fruit were relevant. The 'Suncrest' on Jupiter and GF677, produced fruit with the greatest antioxidant activities and total phenolic contents, The 'Suncrest' on Citation and, especially, Barrier1 had reduced nutritional values of the fruit. The variations in antioxidant activities and total phenolic contents showed a positive correlation (M. Giorgi et al., 2005).

Methods And Materials

The research was conducted at Govt. Post Graduate College Khar. Peach of healthy and uniform size was selected for this study. Fruit showing the symptoms of surface damage or abnormalities was discarded. The fruits from different types were divided into two groups each containing 50 fruits. One lot was analyzed for different quality attributes while the other was shifted to cold storage and stored for 15 days at cooled storage and 60-70 % relative humidity. The data was recorded for the following post-harvest quality parameters at 0 and 15 days of storage.

Physiochemical analysis: Ascorbic acid content, total acidity. Total soluble solids were determined by the method as reported in AOAC (2000).

1. Weight loss (%) of Peach:

Three fruits in each treatment were separated for weight loss test. The initial weight of each fruit was noted with the help of electronic balance. The weight loss (%) was calculated as under:

$$\text{Fruit weight loss (\%)} = \frac{\text{Initial weight} - \text{final weight}}{\text{Initial weight}} \times 100$$

2. Percent juice content of Peach: Initial weight Juice was extracted from five randomly selected fruit from each treatment with the help of juice extracting machine, weighed and the percentage was determined.

$$\text{Percent Juice} = \frac{\text{Weight of fruit juice}}{\text{Average weight of juice}} \times 100$$

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

3. Total soluble solids ("Brix) of Peach: Total Soluble Solids of the fruit was determined at 0 and 15 days storage accordingly. Total soluble solids (TSS) were measured with a hand refractometer.

Device use for

A hand refractometer and digital refractometer (Atago RX-1000) was used to find the Brix

Procedure.

- I took a hand refractometer and Digital refractometer
- Then cleaned the prism with the distilled water and dried.
- Whenever refractometer show zero Brix it was corrected
- I placed the juice drops on the prism and closed the lid
- The reading was show on the screen immediately and was noted.

4. Total sugars:

Reducing and non-reducing sugars was determined by the method as described in A.O.A.C (1990).

5. Percent acidity:

Acidity was determined by neutralization reaction (AOAC, 1990)

Procedure:

First we take 100ml of peach juice samples of unknown acidity in a conical flask then add 10ml of distilled water, then titration starts with a standard 0.1N NaOH solution from the burette. The completion of the reaction is seen by using phenolphthalein as a light pink color appears at the end point, the acidity is calculated as follows.

$$\text{Percent acidity} = \frac{N \times T \times 0.0067 \times 10}{DS} \times 100$$

Where as N=Normality of a solution

T = ml of 0.1N NaOH used

D= ml of sample taken for dilution constant factor

S=ml of diluted sample taken for titration and 0.0067 is the constant factor.

6. Sugar-Acid Ratio

Sugar and acid ratio was determined by the following formula:

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

$$\text{Sugar/Acid} = \frac{\text{TSS}}{\% \text{Acidity}}$$

Five fruits in each treatment were used and reading was recorded and average sugar-acid ratio was noted for each fruit.

7. Ascorbic acid (mg/ml):

Ascorbic acid was determined by the standard dye method as reported in AOAC (1990).

- Reagents:
- Dye solution,
- Hot distilled water
- Sodium bicarbonate
- Oxalic acid

Procedure

we take 10 ml of juice Peach was taken in volumetric flask and volume was made by adding 10ml, 0.4% oxalic acid, then 10ml Of prepared sample was taken in the flask and was titrated was against dye, note the reading when light pink color appeared at the end, the three repeating reading were taken for each sample.

Calculation of ascorbic acid uses the following formula:

$$\text{Ascorbic acid} = \frac{F \times T \times 10}{D \times S} \times 100$$

T=ml of dye used for sample

S=ml of diluted sample taken for titration

D= ml of sample taken for dilution.

8. Organoleptic evaluation:

Selected samples of the product will be evaluated organoleptically for color, flavor and overall acceptability by a panel of 10 judges.

10. Data Analysis: The data was shown by graphs and tables.

Results And Discussion

1.1 Weight Loss of Peach

The data related to percent weight loss are placed in table 2.1. The statistical analysis showed significant differences between peach types during storage. However the analysis revealed that there was a low increase in the percent weight loss during cool storage. The least weight loss 2.3% recorded and maximum weight loss (10.8) during storage in pink red peach and minimum weight loss (2.1%) and high weight loss (9.8%) measured in white peach at 15 days at cool storage

Babos et al., (1984) who reported that the fruit weight loss in fruit depends upon the

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

structure of the skin and nature of waxes on the surface of the fruit. The study of Vander-Beng, (1981) has demonstrated that the moisture loss reduces the visual quality and adds the loss of turgor pressure and resulting softening. The minimum weight loss in white peach may be because of thicker waxy layer, qualities of this cultivar Veraverbeke et al., (2003). The similar result was reported by Ghafir et al. (2009) that the moisture and resulting weight loss in fruit increase directly with increased storage duration because of water loss and respiration.

2.1 Table

Peach Type	0 Days	5 Days	10 Days	15 Days	Mean	Standard Deviation
Red Peach	0	2.3	5.8	10.8	4.725	4.6999
White Peach	0	2.1	5.3	9.8	4.3	4.2654

1.2: Percent Juice Content of Peach during storage.

Data of percent juice content are placed in table 2.2. Statistical analysis revealed significant difference in percent juice content in during storage time. Maximum juice content (56.53%) was recorded at initial time and minimum juice content (42.6%) was recorded during storage time in red peach and white peach percent juice content (55%) was recorded at initial time and stepwise decrease of percent juice content to 48.9% at refrigerated storage duration. Tu et al., (2000) reported that the juice content of fruits depend on the water content of fruit developed starting from the earliest stage of water loss and thus can be decreased by extending relative humidity. The lessening in percent juice content decrease is because of water loss from the tissue which increments with refrigerated storage duration Allan et al., (2003).

2.2 Table

Duration	0	5	10	15	Mean	Standard Deviation
Red peach	56.53	53.66	49.66	42.6	50.6475	6.032121665

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

White peach	55	54.1	51.1	48.9	52.275	2.800446393
-------------	----	------	------	------	--------	-------------

1.3: Total Soluble Solid ("Brix) of Peach during storage.

The related data total soluble solid placed in table 2.3. The analysis showed that there was a difference in total soluble solid during cool storage. At refrigerated storage period significantly effect on total soluble solid (TSS) while the interaction influence was non-significant, A continuous increment was seen TSS with expanding the cold storage life. The maximum value of TSS (12.6 Brix) was measured in each store for 15 days, while minimum TSS (8.5 Brix) was observed at initial storage interval. Weibsel et al., (2004) studies that TSS of peach and different fruit are an important quality parameter, which is related with the texture and composition. Intizar Ahmad et al., (2020) who observed the reducing the phenomenon of starch transformation to sugars that is needed for sustaining the fruits' total soluble solid. TSS of fruits increases with high respiration and other metabolic activities and this may be because of proto-pectin's breakdown into pectic-substances, disaccharides and fructose into monosaccharide. AS Mahajan (1944) studied that total TSS increased at refrigerated storage.

Table : 2.3 : Total soluble solid of Peach Fruits during storage.

Duration	0	5	10	15	Mean	Standard Deviation
Red peach	0	2.3	5.8	10.8	4.725	4.699911347
White peach	0	2.1	5.3	9.8	4.3	4.265364385

1.4: Total Sugar of Peach Fruits During storage.

The data of total sugar are placed in table 2.4. The statistical analysis showed that the total sugar was significantly influenced at the refrigerated storage. A significant incremental increase in total sugar recorded with the expending the storage length of time. The high value of total sugar (7.4%) was recorded in red peach and the lowest value was observed (6.3%). High value (7.2%) recorded and low value (6.2%) in white peach stores for 15 days at refrigerated storage. The sugar content, sucrose, glucose, and fructose in these substances add to the fruit's sweetness and one of real attributes of fruit quality and market value. The data show that there was an incremental increase in reducing sugar while non-reducing sugar decreased at cooled storage time. The finding of Anjum et al.,(200) are similar who reported an extension in reducing sugar while staying the apricot diet jams in the storage duration. The reducing sugar rate development may be the result of the conversion of sucrose to reducing sugar. The result was moreover similar to the report of Srivastava and Souza (1962) who recorded

the effect of storage on non-reducing sugar in the Japanese fruits. The reduction in non-reducing sugar may be a direct result of the change of non-reducing sugars to reducing sugar. Beaudry et al., (1989) Who investigated that the starch to sugars changes proceed at any rate during storage, resulting in an increase in total sugar with increased length of time. The development in sugar could be because of breakdown of polysaccharide into water soluble sugar.

1.5: Sugar Acid Ratio of Peach Fruits during storage time.

Data recording sugar acid ratios are given tables. The statistical analysis showed that there was significant difference in sugar acid ratio in peach types at refrigerated cooled storage period. The high value (39%) and least value (12.98) were recorded in red peach. And High value (47%) and low value (13%) was recorded in white peach. At initial time there was little difference in sugar acid ratio. The refrigerated storage period had a significant influence on the sugar acid ratio of peaches. There was an incremental increase in sugar acid ratio with increasing the storage period. Peck et al., (2004) studied that sugar acid ratio of apple and other fruit is paramount quality parameter. According to the comprehensive study of El-Zeftawi et al., (1982) who reported that immature fruit ordinary have a low sugar acid ratio as a result of low sugar and high acid level, making fruit taste harsh. As fruit develops and matures, starch is changed into sugar. Increasing the sugar content while the acid decreases, bringing about a higher sugar acid ratio. Comparable results were also aligned with the finding of Ghafir et al., (2009) he observed the expansion in sugar acid ratio can be attributed to starch breakdown bringing about free sugar and decrease in organic acids because of its utilization in respiration

1.6: Percent Acidity of Peach Fruits during Storage Time.

Data of percent acidity are placed in the table. The statistical analysis shows that there was a significant difference among them at refrigerated storage. The highest amount of acidity (0.67) was recorded at initial time and low percent acidity was (0.32) in Red peach. While highest percent acidity (0.68) at initial time and low value (0.29) was observed at 15 days storage. Riveria, (2005) According to the study of percent acidity of the fruits relies upon the rate of metabolism particular respiratory which devoured organic acids and this way decrease acidity. Chang et al., (1999) have gone through extensive study on the fruit being living organs that respire even after reaped from the tree and during storage which use the organic acid and therefore reduce the percent acidity of the fruits.

2.4 Table

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

Duration (Days)	0	5	10	15	Mean	Standard Deviation
Red Peach	0.67	0.39	0.35	0.32	0.4325	0.160909
White Peach	0.68	0.41	0.33	0.29	0.4275	0.175557

1.7: Analysis Ascorbic Acid in Peach Fruits during Storage Time.

Data of ascorbic acid are placed in the table. The statistical analysis revealed that there were significant differences in ascorbic acid by refrigerated storage duration. A high value of ascorbic acid (6.1) value was observed in white peaches. While in Red peach ascorbic found (5.8) during storage. The ascorbic is reduced with incremental addition of storage time so it decreases from the highest value(6.1- 2.9) in white peach while in red peach (5.8-3.6) noted from the 0 day storage to lowest of 15 days storage respectively. Lata, (2007) reported that ascorbic acid is generally considered as an important nutritional quality in peach fruits .Ascorbic acid as a bioactive compound having antioxidant properties. Quart Ullah Khan et al, (2018) The amount of crude ascorbic acid in controlled peach was 7.8% initially which was measured as 7.20% and 6.30% after the first and second week respectively. After irradiation of a sample stored in a paper box with 2.5 KG, the amount of crude ascorbic acid determined was 6.60% and 5.80% after the first and second week respectively. Similarly, samples from wooden boxes showed the crude ascorbic acid content as 6.0% and 5.40% after the first and second week respectively. After the irradiation of samples with 5.0 KG, the crude ascorbic acid content of paper-packed samples was 6.20% and 5.50% after two consecutive weeks and that of wooden samples were 5.70% and 5.10% after the first and second week respectively. The data revealed that regular decrease was observed in the amount of crude ascorbic acid with time and dose of irradiations.

Peach Type	Duration (Days)	Percent Acidity	Mean	Standard Deviation
Red Peach	0	5.8	5.0	1.045626
Red Peach	5	5.8		
Red Peach	10	4.8		

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

Peach Type	Duration (Days)	Percent Acidity	Mean	Standard Deviation
Red Peach	15	3.6		
White Peach	0	6.1	4.675	1.424488
White Peach	5	5.5		
White Peach	10	4.2		
White Peach	15	2.9		

Table 1.8. Organoleptic test of peach fruits.

In order to fully evaluate the samples in the light of their experience, a panel of 10 experts, passed their verdict and opinions. They evaluated the fruit Organoleptic Ally for color and flavor. The interval for observation was fixed at 5 days for the sample and the whole length of time was 15 days for the experiment. Table 2.8: Color and Flavor were tested by visual observation and taste for sensory Evaluation of peach

Overall Acceptability

Data pertaining to overall acceptability is placed in Table 1.8 the analysis of Variance for overall acceptability reveals that there was significant difference. The highest mean value was (6.78) and lowest (4.99) at 0 and 15 days of Storage period. The overall acceptability of the apple fruit decreased as the storage duration increased. Over acceptability is generally more useful in the new produces development and determining products Standards.

Conclusions

- Significant decrease in peach weight loss, percent juice and ascorbic acid were recorded at refrigerated storage.
- Gradually an increase was seen in TSS, total sugar and sugar acid ratio.
- The ascorbic acid, acidity and percent juice content of peach were decreased during refrigerated storage for 15 days.

Recommendation

The peach fruit due its high percent of juice content, ascorbic acid and minimum weight loss during storage can be recommended for cool storage for 15 days.

- The peach fruits are more susceptible to the incidence and other disease during long storage.

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

- Thus protective treatment should be used to decrease disease during prolonged storage.
- The peach fruit have maximum weight loss; hence maximum relative humidity can decrease the rate of weight loss during cool storage.

References

- Kyureghian, G., Stratton, J., Bianchini, A., & Albrecht, J. (2010). Nutritional comparison of frozen and non-frozen fruits and vegetables: Literature review. Lincoln, NE: The Food Processing Center, University of Nebraska-Lincoln.
- Fa S.B.N, Gil M.I, Cremin P (2001). HPLC-DAD-ESIMS, analysis of phenolic Compounds in nectarines, peach and plums J Agric Food 49: 4748-4760.
- Association of official and analytical chemists (2000). Arlington, Virginia, USA
- Crisosto C.H, Valero D, Layne D (2008). Harvesting and postharvest handling of peaches for the fresh market, Peach Botany Production and Users 49-575-5964.
- Crisosto C.H, Mitchell F.G, Johnson S (1995). Factors in fresh market stone fruit quality. Postharvest News and Information 6: 17N-21N.
- Ihsanullah, I. Iqbal, Y.Khattak, TN (2005). Effect of various irradiation doses on some nutrients of Pakistani Dates, Radioanal, Nucl, Chem., 266, 361-366.
- Irfan, A. Abbasi, N.A. Hafiz, L.A. (2014). Physiological response and quality attributes of peach fruit cv. Flordaking as affected by different treatments of calcium chloride, putrescine and salicylic acid. Pak. J. Agric. Sci., 51, 33-39.
- Agri. Stat. of Pak. 2008-2009. Ministry of food and agriculture, Agricultural statistics of Pakistan, Government of Pakistan, Islamabad. 1-9
- Ahmed, D. M. O. M. Hafez, and M.D. Solliman (2007). Integrated control of post-harvest decay on blood orange fruits by curing, hot water and sodium carbonate applications. J. Agri. Bio. Sci. 3 (6): 590-598.
- Ali, A., Mahmud, T.M.M., Sijam, K., Siddiqui, Y. (2011). Effect of chitosan coatings on The physicochemical characteristics of Eksotika II papaya (*Carica papaya* L) fruit during cold storage. Food Chem. 124, 620-626.
- Syamsir, Elvira. Minimally processed for fruit and vegetable in Indonesian, Kulinologi Magazine, pp 15-20. September 2010 edition
- Wills, R.B.H, W.B. McGlasson, D. Graham and D.C. Joyce, Postharvest, Oxfordshire: UNSW Press (2007),
- Ancos, B., Gonzalez, E. M., & Cano, P. (2000). Ellagic acid, vitamin C, and total phenolic contents and radical scavenging capacity affected by freezing and frozen storage in raspberry fruit. Journal of Agricultural and Food Chemistry, 48, 4565-4570.
- Cheng, G. W., & Breen, P. J. (1991), Activity of phenylalanine ammonialyase (PAL) and concentrations of anthocyanins and phenolics in developing strawberry fruit, Journal of American Society for Horticultural Science, 116, 865-869.
- Hakkinnen, S. H., K. Arenlampi, S. O., Mykk. Anen, H. M. & T. Orr, Onen, A. R. (2000). Influence of domestic processing and storage on flavonol contents in berries. Journal of Agriculture and Food Chemistry, 48, 2960-2965.
- Skrede, G. Fruits, In Freezing Effects on Food Quality, Jeremiah, L.E., Ed.; Marcel

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

Dekker: New York, 1996; pp 183-245.

Anon 2002, GB/T 601-2002: Chemical reagent: Preparations of standard volumetric solution. National Committee of the ISO/IEC, Standardization Administration of China, Beijing, China AOAC. 1990. Official methods of analysis. 5th ed., Association of Official Analytical Chemists, Washington, DC, USA

AOAC 1990, Moisture in dried fruits. Association of Official Analytical Communities Official Method 934.06, Methods of Analysis, 15, 912

Artes.F, Gomez, P.A. and Artes-Hernandez F. (2007), Physical, Physiological and microbial deterioration of minimally fresh processed fruits and vegetables, food Science and Technology International, 13, 177e188.

Liguori, G., Weksler, A.; Zutahi, Y., Lurie, S., Kosto, I. (2004), effect of 1-methylcyclopropene on ripening of melting flesh peaches and nectarines, Postharvest Biol. Technol. 31, 263-268. [Cross Ref]

Khalil, I., Idrees, M., Rabi, F., Rehman, S.U, Bostan.N (2014), an investigation into the problems of peach growers, in district swat. Arpn J. Agric. Biol. Sci., 9, 427-434. 4.-36.

Bakshi, P.; Masoodi and F.A. (2005), use of intermittent warming to control chilling injury in peach

during storage, in Proceedings of the VII International Symposium on Temperate Zone Fruits in the Tropics and Subtropics, Solan, India, Acta Horticulturae 696 pp. 523-526.

Khan, A.S., Singh, Z., Abbasi, N.A., Swinny and E.E. (2008), Pre- or postharvest applications of putrescine and low temperature storage affect fruit ripening and quality of 'Angelino' plum. J. Sci. Food Agric., 88, 1686-1695. [Cross Ref]

Bakshi, P.; Masoodi, F.A. (2003). Use of modified atmosphere, and refrigeration to extend postharvest life of peach, Paper Presented at the 5th International Food Convention (IFCON-2003), Mysore, India, 5-8.

Gonzalez-Aguero, M.; Pavez, L.; Ibáñez, F.; Pacheco, I.; Campos-Vargas, R.; Meisel, L.A.; Orellana, A.; Retamales, J.; Silva, H.; Gonzalez, M.; et al.(2008), Identification of woolliness response genes in peach fruit after post-harvest treatments. J. Exp. Bot., 59, 1973-1986.

Lurie S., Crisosto and C.H. (2005), was chilling injury in peach and nectarine, Postharvest Biol. Technol., 37, 195-208. [CrossRef]

Strada G.D, Fideghelli C. (2003). Le cultivar de drupacee introdottee Del 1991 al 2001, L' Informatore Agrario, 59(41):65-70.

Bielenberg D., Gasic K, and Chaparro J.X (2009), an Introduction to Peach (Prunus Persica),

Genetics and Genomics of Rosaceae, New York: Springer: 223-234.

Abbasi, N.A., S. Hafeez, and M.J. Tareen, 2010, Salicylic acid prolongs shelf life and improves quality of "Mari Delicia" peach fruit. Acta Hort., 880: 191-197.

Abbasi, N.A., Kushad, M.M., Endress and A.G., 1998, active oxygen-scavenging enzymes activities in developing apple flowers and fruits. Sci.Hortic. 74, 183-194.

Abbasi, N.A., Kushad, M.M., 2006. The activities of SOD, POD and CAT in 'Red Spur Delicious' apple fruit are affected by DPA but not calcium in postharvest drench solutions. J. Am. Pomolog. Soc. 60, 84-89.

Abbasi, N.A., Hafeez, S., Tareen, M.J., 2010. Salicylic acid prolongs shelf life and

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

- improves quality of Maria Delicia' peach fruit. *Acta Horti*, 880, 191-197.
- Akbudak, B., Eris, A., 2004, Physical and chemical changes in peaches and nectarines during the modified atmosphere storage. *Food Control* 15, 307-313.
- Akhtar, A., Abbasi, N.A., Hussain, A. (2010). Effect of calcium chloride treatments on quality characteristics of loquat fruit during storage, *Pak J. Bot.* 42 (1), 181-188.
- Intizar Ahmad, Abdul Basit, Syed Tanveer Shah, Inayat Ullah, Muhammad Areeb Khalid, Izhar Ullah, Imran Ahmad, Nasrullah Khan, Sikandar Aman, Muhammad Abbas, Owais Khan1, Noo ul Ain and Muhammad Hanif (2020). Quality traits and storability life of peach fruit as effected by hot water dipping treatment. *Bioscience research*, 2020 17(4): 4021-4033.
- Muhammad Javed Tareen, Nadeem Akhtar Abbasi and Ishfaq Ahmad Hafiz (2012), effect of salicylic acid treatments on storage life of peach fruits cv. 'Flordaking'. *Pak. J. Bot.* 44(1): 119-124, 2012.
- Muhammad Javed Tareena, Nadeem Akhtar Abbasi b, Ishfaq Ahmad Hafiz (2012). Postharvest application of salicylic acid enhanced antioxidant enzyme activity and maintained quality of peach cv. 'Flordaking' fruit during storage. *scienta*.2012.04.027.
- J. Pagan, A. Ibarza, M. Llorca, Pagan, G.V. Barbosa-Canovas 2001. Extraction and characterization of pectin from stored peach pomace. *Food Research International* 34 (2001) 605-612.
- Lijun Sun, Sheng Liu, Zhongyang Fan, Yan Li, Junyan Wang, Yvfu Zhong, Qi Zhang, Xiaoming Duan. 2018. The Impact of Storage Temperature on Fruit Quality and Chilling Injury of 'Okubao' Peaches. *Int J Food Biosci* Vol: 1, Issu: 1 (12-18).
- Mohammad Affan Fajar Falah, Meydi Dima Nadine and Ag Suryandonoa (2015) effects of Storage Conditions on Quality and Shelf-life of Fresh-cut Melon and Papaya. *Procedia Food Science* 3 (2015) 313-322
- Peter Abah Idah, John Jiya Musa and Mohammed Abdullahi (2010), effects of storage period on some nutritional properties of orange and tomato. *AU J.T.* 13(3): 181-185.
- Giovana Bonat Celli, Amyl Ghanem Marianne Su-Ling Brooks (2016). Influence of freezing process and frozen storage on the quality of fruits and fruit products. [http: Nouredine Touati, Martha Patricia Tarazona-Diaz, Encarna Aguayo, Hayette Louaileche \(2013\), Effect of storage time and temperature on the physicochemical and sensory characteristics of](http://Nouredine Touati, Martha Patricia Tarazona-Diaz, Encarna Aguayo, Hayette Louaileche (2013), Effect of storage time and temperature on the physicochemical and sensory characteristics of commercial apricot jam, food chemistry 145 (2014) 23-27.)
- commercial apricot jam, *food chemistry* 145 (2014) 23-27.
- J. Fernando Ayala-Zavala, Shiow Y. Wang, Chien Y. Wang, Gustavo A. Gonzalez-Aguilar. 2004. Effect of storage temperatures on antioxidant capacity and aroma compounds in strawberry fruit. *Lebensm.-Wiss. u.-Technol.* 37 (2004) 687-695
- Inga Klimczak, Maria Malecka, Mirosława Szlachta, Anna Gliszczynska-Swiglo 2006, Effect of storage on the content of polyphenols, vitamin C and the antioxidant activity of orange juices 10, 60-967.
- Derek F. Keenan, Christian Roble, Ronan Gormley, Francis Butler, Nigel P. Brunton (2011). Effect of high hydrostatic pressure and thermal processing on the nutritional quality and enzyme activity of fruit smoothies, *Food Science and Technology* 45 (2012) 50e57
- Marco Cirilli, Daniele Bassi and Angelo Ciacchiulli (2016), Sugars in peach fruit: a

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

breeding perspective. 10.1038.

Malecha Manzoor, Farooq Anwar, Zahed Mahmood, Umer Rashid and Muhammad Ashraf (2012). Variation in Minerals, Phenolics and Antioxidant Activity of Peel and Pulp of Different Varieties of Peach (*Prunus persica* L.) fruit from Pakistan. 1420-3049. Amihud Kramer (1977). Effect of Storage on nutritive value of food, *Journal of Food Quality* 1 (1977) 23-55

Chen Ma, Li Feng, Leiqing Pan, Kangli Wei, Qiang Liu, Kang Tu, Li Zhao, Jing Peng (2020). Relationships between optical properties of peach flesh with firmness and tissue structure during storage. *j.postharvbio*.2020.111134

Xiaolin Zheng, Shiping Tian, Xianghong Meng, Boqiang Li (2006) Physiological and biochemical responses in peach fruit to oxalic acid treatment during storage at room temperature.0308- 8146

Ana Oliveira, Marta Coelho, Elisabete M. C. Alexandre, Manuela Pintado (2017). Impact of storage on phytochemicals and milk proteins in peach yoghurt. DOI 10.1007/s11694-017-9562-x

J. Pagan, A. Ibarz, M. Llorca, A. Pagan, G.V. Barbosa-Canovas (2001). Extraction and characterization of pectin from stored peach pomace. *Food Research International* 34 (2001)

605-612

Nadeem Akhtar Abbasi, Irfan Ali, Ishfaq Ahmad Hafiz, Mekhled M Alenazi and Muhammad Shafiq (2019) Effects of Putrescine Application on Peach Fruit during Storage. Department of horticulture, PMAS-Arid Agriculture University, Rawalpindi 46000, Pakistan,

Anurag Payasi, Nagendra Nath Mishra, Ana Lucia Soares Chaves and Randhir Singh (2009) Biochemistry of fruit softening. *Physiol. Mol. Biol. Plants* 2009, 15(2): 103-113)

Palwasha, Siraj-ud-Din and Muhammad Fahim (2022), Significance and Implications of Farming Practices, Knowledge and Methods of Disease Management in Developing Countries: A Case Study of Peach Farmers in Pakistan. <https://doi.org/10.1007/s11694-017-9562-x> Abid Hussain, Romaina Iqbal, Syed Iqbal Azam, Naveed Jafar Janjua and Sameera Rizvi (2020), Is high availability of fruit and vegetable beneficial for children with anemia? A cross-sectional study in two peri-urban communities from Pakistan, *ijbmph* 2020.206555.1138

Albas, E.S., Jimenez, S., Aparicio, J., Betran, J.A., Moreno, M.A. 2004, Effect of several peach almond hybrid rootstocks on fruit quality of peaches, *Acta Horti*. 658, 321-326.

DeJong, T.M., Johnson, R.S., Doyle, J.F., Weibel, A., Solari, L., Marsal, J., Basile, B., Ramming, D., Bryla, D.2004 Growth, yield and physiological behavior of size-controlling peach rootstocks developed in California, *Acta Horti*. 658, 449-455.

M. Giorgi, F. Capocasa, J. Scalzo, G. Murri, M. Battino, B. Mezzetti 2005. The rootstock effects on plant adaptability, production, fruit quality, and nutrition in the peach. *Scientia Horticulturae* 107 (2005) 36-42.

Gayaneh Kyureghian, Rodolfo M. Nayga Jr., and Suparna Bhattacharya (2012), the Effect of Food Store Access and Income on Household Purchases of Fruits and Vegetables: A Mixed Effects Analysis. pp. 69-88. doi: 10.1093

Online ISSN

3007-3197

Print ISSN

3007-3189

<http://amresearchreview.com/index.php/Journal/about>

Babos, K., P.Saas and P.Mohacsy (1984), Relationship between the peel structure and storability of apple, *Acta agron, Acad. Sci. Hung* 33: 41-51.

Veraverbeke, A.E., P.Verboven, P.Oostveldt and B.M Nicolai (2003) Predication of moisture loss

across the cuticle of peach during storage: part 2. Model simulations and practical application postharvest *BIOL. And & Technol*, 30: 89-97

Tu, K., B. Nicolai and J. D. Baerdemacker (2000), Effect of relative humidity on peach quality under simulated shelf temperature storage, *Scientia Horticulture*. 85(3): 217-229.

Allan, B. W., K. A. Cox, A. White and I. B. Ferguson (2003), Low temperature conditioning treatments reduce external chilling injury of 'Hass' Avocados. *Post-harvest Bio &Tech* 28(1): 113-122

Magein, H. and D. Leurguin (200), Change in amylase, Amyl pectin and total starch content in apple fruits during growth and maturation. *Acta Hortic* 517: 487-491.

Weibel, F., F. Widmer and A.Husistein (2004) Comparison of production systems: integrate and organic apple production. Part III: Inner quality: Composition and sensory, *Obst-und Weinbau*. 140: 10-13

Muhammad Hanif (2020). Quality traits and storability life of peach (*Prunus persica* L.) Fruit as affected by hot water dipping treatment. *Bioscience research*, 2020 17(4): 4021-4033.

Qudart Ullah Khan, Imdadullah Mohammadzai, Ziarat Shah, Ihsanullah, Tariq Nawaz Khattak, Hamsa Noreen and Waseem Hassan (2018), Effect of Gamma Irradiation on Nutrients and Shelf Life of Peach (*Prunus persica*) Stored at Ambient Temperature. *The Open Conference Proceedings Journal*, 2018, 09, 8-15