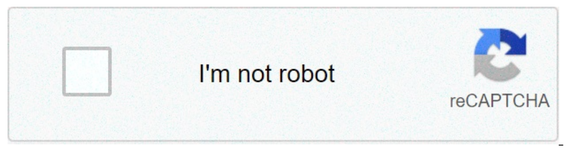

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Types of spoilage

Module 3. Microbiology of food raw Lesson 8 Microboscopio Spoiling of ortaggi8.1 materials Introduction They form part of the diet vegetables because of their role in providing various types of vital nutrients such as carbohydrates, minerals, vitamins, rough, etc. Vegetable produce, contain high moisture making them highly perishable foods and therefore more prone to deterioration. The microorganisms gain entrance into the vegetables from various sources. These sources include: FULL OF WATER PLANT PLANT PLANT AND EQUIPMENT AND AUTTREZZATURA ELETTREZZATURE ESCLUSIVAMENTI Packaging and Packaging Material contact with spoiled vegetables The conditions in which the vegetables are transported and stored after harvest also contribute to spoiling rate. In addition to microbial sources, the deterioration of the vegetables can also occur due to the activity of the native enzyme. 8.2 Types of spoiling vegetables The microbial spoilage of vegetables is predominantly 8.2.1 of the following types of deterioration due to pathogens of plant pathogens that infect the stem, leaves, roots, flowers and other parts of the fruit or same. 8.2.2 The deterioration due to Saprofites vegetables have the general microflora that live in them. These organisms certain conditions can grow these vegetables and spoil them. The list of these organizations is given in Table 8.1. There are some secondary invaders that can get into healthy food or grow after the growth of pathogens. It is known that plant diseases are mostly caused by fungus. So most of the deterioration causing pathogens in vegetables are mushrooms. Mushrooms have specific features when sofferiscono food while leading soft areas that could be submerged by water. The fungi produce spores features that can be pigmented. The pigmentation helps in identifying the type of decay fungi. Even bacterial diseases cause deterioration of vegetables, but to a lesser extent. Figure 8.1 represents the bacterial and fungal diseases of tomato. Table 8.1 Normal microflora of vegetables Table 8.2 The main types of spoilutori of pathogens in vegetable production in vegetables is largely influenced by the composition of vegetables. The food does acids are then spoiled by bacterial rot while the acidic foods with dry surfaces are more prone to the mold deterioration. The product of such organism grows and types of organisms growing in large part determine the nature of the deterioration. Dead soft bacterial caused by Erwinia carotovora and Pseudomonas such as P. marginalis. Clstridium and Bacillus spp. They are also implicated. Scompela pectin, giving rise to a soft and smooth texture, sometimes a bad smell and un'atpperanza wet from the water. Vegetables suffering from onions, garlic, beans, carrots, beets, lettuce, spinach, potatoes, cabbage, cauliflower, radishes, tomatoes, cucumbers, watermelons. Some types of deterioraggio in by bacteria vegetables are shown in figure 8.1 to 8.7 Fig. 8.1 bacterial disease and fungal soft tomato rot in tomato caused by Erwinia carotovora (left) blue rot mold in tomato caused by Penicillium SPP (a right) fig. 8.2 Decay soft blight in tomato, capsicum and potato fig fig 8.3 blackleg of potatoes Erwinia carotovora var. Atroseptica fig 8.4 Rotting cabbage and cavolfiore- xanthomonas campestrfig in black. 8.5 Bacterial Wilt beans Corynebacterium flaccumfaciens fig fig 8.6 slime lattuga- Pseudomonas marginalis fig. 8.7 Dlimaty / Souring-bacteria 8.2.3. Spoiling vegetables fungus Penicillium, Cladosporium, rizopus, Aspergillus spp. They are responsible for various defects in vegetables. Some types of deterioration in vegetables by fungi are shown in Figure 8.8 to 8.13. Gray Mold Rot - caused by Berrytis in vegetables. Favored by a high humidity and hot temperature Fig. 8.8 Gray muling chilled in peas and tomato 8.2.3. Vegetable spoiling of vegetables penicillium, cladosporium, rizopus, aspergillus spp. They are responsible for various defects in vegetables. Some types of deterioration in vegetables by mushrooms are shown in Figure 8.8 to 8.13. Rot gray mold caused by Berrytis Cinera in Favorite from high humidity and hot temperature Fig. 8.9 Black Rot Mold Aspergillus Niger, dark brown to mass black Fig. 8.10 Rot Trichothecium Roseum mold Fig. 8.11 Fusarium Rot Fusarium spp. Fig. 8.12 Green Mold Rot Cladosporium and Trichoderma Fig. 8.13 Brown Rot Sclerotinia spp. Table 8.3 Vegetable fungal deterioration examples Module 3. Microbiology of food products Chapter 11 Microbial deterioration of canned foods 11.1 Introduction boxing is an important method for packaging food for long-term storage. Food normally stored in metal containers along with heat treatment. Thermal treatment varies depending on the type of food. There is always the possibility that microorganisms can survive if heat treatment is not taking to such a correct deterioration of food. Usually the incidence of deterioration of canned foods are low. The deterioration of the CAN may be due to biological or chemical motifs or combination of both. The biological deterioration is mainly due to microbial growth while chemical deterioration is due to hydrogen produced by acid reaction in food and tin iron. The degree of bulge can also be increased with high summer temperature and high altitude. Some other factors such as overfilling, instabilities, dents or closing the can while cold can also be responsible for deteriorating food in cans. 11.2 Causes of deterioration in cans 11.2.1 Chemical deterioration Chemical deterioration In many cases is due to the production of hydrogen gas produced in tin due to action of food acid on the iron iron. This deterioration is defined as hydrogen swell. It occurs due to following factors: a) increase in storage temperature. b) Increased food acidity c) improper exhaust d) Presence of soluble sulfur and phosphorus compounds and) Improper timing and lacquering of the CAN to internal surfaces 11.2.2 Organic deterioration The cause of biological deterioration is microbial activity. In thermally treated cans, the growth of microorganisms occur due to: 11.2.2.1 dispersion of can occurs due to manufacturing defects, holes or approximate treatment. Bacteria are introduced into a can in holes or improper seams. In this type, microorganisms are not usually resistant and wide matrix heat of organisms had been found to cause deterioration as post-processing contamination. The microbes can also get the entry into cans due to cold water, used to cool the cans after heat treatment. Loss can also be responsible for the release of void, which can promote the growth of microorganisms. Presence of low heat resistance organisms usually indicates a loss of the can. 11.2.2.2 In the works, it includes a developmental heat treatment, defective crooked operations, excessive microbial loading and product contamination, product consistency variation. 11.3 Stages as CAN A may undergo different transformations from being a normal can completely ruined as it depends on various factors. All these phases are described based on the appearance of the Can from the outside (Table 11.1). Table 11.1 Various deterioration phases within can 11.4 microbial deterioration of canned foods The microbial deterioration of preserves is classified as caused by thermophilic bacteria and mesophilic organisms. Most common spoilages of microbial origin are known as acid deterioration dish, anaerobic thermophiles (TA) deterioration and putrefation. These types are briefly described. 11.4.1 The deterioration from thermophiles form malicious bacteria from these types of bacteria is more widespread in less processed treated food preserves. Their spores survive the thermal treatment and subjected to vegetative cell formation and subsequent growth in box conditions. Major Spolaslages from these organisms are: 11.4.2 Flat acid deterioration This is caused by decomposition bacteria. A characteristic of this deterioration is that the ends can remain unchanged during acidification. Due to this condition, deterioration detection from the outside It is not possible culture so with content become necessary to detect the type of bodies. Main main Involved are Bacillus, while more frequently occurs in low acid foods. Bacillus spp. It has the ability to produce acid without gas formation. 11.4.3 TA Spoiling This type of spoiling is caused by thermophilic anaerobe that does not produce hydrogen sulfide. Clostridium thermosacharolyticum is the main organism involved. It produces acid and gas in food. Vitiated food produces an acid or poor odor. 11.4.4 Spoilish sulfur smelly This type of deterioration takes place in low acid foods and are mainly involved in nigrizzi desolphotomacles. The spores of these bodies are destroyed to optimal thermal treatment, so the presence of this body usually indicates under the transformation in terms of heat treatment. It produces hydrogen sulfide that produces typical odor. 11.5 The deterioration of mesophillic Bacillus and Clostridium spores are involved in this type of deterioration which is usually indicative of under deterioration. Table 11.2 Characteristics of mewsophilic garbage The former deterioration of the Poss 11.6 The deterioration of the presence of unfortunate trainers of non-spores in cans indicate post-processing contamination. The organisms whose vegetative cells are heat-resistant are found more easily. The following bodies are more prominent: Enterococcus Streptococcus Termophilus Micrococcus Lactobacillus Leuconostoc MicroBacterium Presence of these organisms indicates container losses. The cooling water is one of the important source of contamination, so the coilforms also earn the entrance to the can through the loss. 11.7 The deterioration of mushrooms 11.7.1 yeasts and their spores are not thermo tolerant, so they are not found in cans covered in an appropriate manner. Their presence indicates under the processing or postorization contamination through the loss. Fermentation yeasts are more prominent and produce carbon dioxide, causing the swelling of the cans. The cinematographic yeasts can also grow on the surface of food products. 11.7.2 Molds between molds, Aspergilus and penicillium are more ruin organisms. These can grow high concentration of sugar. Acidification is considered method to prevent the growth of molds. Some of the molds are heat resistant. The molds are more common in canned foods where heating and sealing are not in total aseptic conditions. conditions.

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