Studies on spoilage of some foods

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5- SUMMARY AND CONCLUSIONThis work was carried out as a try to study the microbial and chemical changes occurred for different food stuffs taken from retail market during storage as well as studying the effect of gamma irradiation [1.5/2.5/3.0/5.0/7.5/10.0 KGY On keeping quality and evaluate the microbiological and chemical characteristics. In additionisolation and identification of Bacilli species from these food stuffs were investigated. The samples were:1-Fresh food stuffs(chicken meat and fish flesh) from Egyptian market.2-Dry food stuffs (dryfish, (wazaf) cinnamon, cloves, cardamom, red pepper and fenugreek flour) from yemeni market.The results can be summarized as following: Chemical Analysis: Chemical analysis included the determination of moisture / protein / lipid / carbohydrate, and ash contents, some chemical idicates for spoilage, were studies i.e Total volatile basesnitrogen (T.V.B.N), Thiobarbituric acid (T.B.A) and PH values. It was found that:chemical analysis of all control samples (at zero time) for all previous chemical contents were in agreement with the chemical content criteria for Arabian and Egyptian standard foods.2- The effects of gamma irradiation at (1.5 - 10 KGY) doses andconditions of storage on the chemical properties of all samples were as follows:a- No effect on the major constituents of all tested samples comparing with the control samples.1--264-b-Slight loss on moistures, proteins, lipids and PH values.c-Slight increasing in (T.V.B.N), (T.B.A) and carbohydrates, contentsd-No differences were recorded in ash contents.e-The differences in dry food stuffs were smaller than in fresh food stuffs induced by storage and irradiation.f-The slight difference (decrease or increase) for all samples had go with the power of the irradiation dose levels or/and the time of storage compared with control.g-Slight decrease in moisture, proteins, lipids content and pH values, induced by both kind of storage for unirradiated and irradiated samples.11- Slight increase on (T.V.B.N), (T.B.A) and, carbohydrate induced by different kind of storage for all samples (unirradiated and irradiation). Microbiological Evaluation:1-Microbiological evaluation of control samples (at zero time) for all samples were agreement with the microbiological criteria for Arabia and Egyptian standard foods.2-Gamma irradiation (1.5 - 10.0 KGY) reduced the microbial contamination density in all treated samples; the reducing had go with the irradiation dose increasing, the higher dose, the greater reduction of bacterial load.3-The microbial density of the total count of aerobic, sporeforming and Bacillus spp no affected by the irradiation doses.4-The microbial density of all samples (unirradiated and irradiated) increasing during both two kinds of storage. The total counts-265-increased with increasing time of storage. The increasing in fresh food was higher than dry foods and the increasing in control samples higher than irradiated samples. Therefore, the microbial count decreased with increasing the irradiation doses the higher irradiation dose, the greater reduction of bacterial load on all samples under investigation comparing with unirradiated samples.(1) Aerobic bacteria: A- The gamma irradiation reducing the microbial density in all samples; the number of bacteria decreased with increasing the radiation dose, the higher dose, the greater reduction of bacterial load comparing with control samples it recorded in control samples (at zero time): 6.5 x 10 4 / 6.0 x 10 4 / 1.2 x 10 4 / 2.4 x 10 3 / 1.2 x 10 2 / 3.8 x 10 2 / 3.1 x 10 3 / 1.0 X 10 3 cuf /g for chicken, freshfish,dry fish, cinnamon, cloves, cardamom pepper and fenugreek flour respectively and reached to 1.3 x 10 / 9.0 / 6.3 x 10 / 9.5 / 2.6 / 8.0 / 1.0 x 10 / 8.1 cuf/g at the highest dose for same previous samples.B- During different kinds of storage the total counts increased with the time of storage increasing in all samples.(2) Anaerobic bacteria: A- Irradiation dose level (10.0 KGY) destroyed all anaerobic bacteria on chicken meat and fresh fish flesh.B-

Another irradiation dose reduced the number of microbial density on all irradiation samples recorded at 1.1 x 10 3 / 9.8 x10 2 / 4.1 x 10 25.3 x 10 / 9.0 / 1.1 x 10 / 7.1 x 10 / 6.4 x 10 cuf /g in control samples and reached to 8.0 / 3.6 / 1.4 x 10 / 7.0 / 2.1 / 7.0 / 4.0 cuf /g at highest dose on all previous samples respectively.-266-C- During both two kinds of storage, the total counts increased with the time of storage increasing on all samples. The increasing on control samples higher than irradiation samples, the increasing of total counts on fresh food higher than on dry foods.(3) Yeast and Moulds: A- The total counts in control (at zero time) it recorded 2.5 x 10 3 / 1.3 x 10 2 / 8.0 x 10 / 4.2 x 10 / 3.9 / 7.0 / 2.9 x 10 / 3.8 x10 / cuf/g on all previous samples respectively.B-All the viable cells were destroyed at irradiation dose level (5.0 KGY).C-The total counts of all samples were increased during two kinds of storage while the total counts on fresh food were higher than dry foods.(4) Psychrotrophic bacteria: A- It was the determined on chicken and fresh fish,.B- Irradiation doses at level (10 KGY) destroyed all viable cells on samples under studying. C- Another irradiation doses was reduced the total count of all samples comparing with control samples.D- The total count was decreased, the decreased had go with irradiation doses increasing, the greater dose reduction more than smaller one. E-The total counts of all samples increasing during storage; unirradiated samples increasing more than irradiated samples.(5-6) Bacillus spp and spore forming bacteria:A- No observed effect appeared on all previous bacteria induced by irradiation. B- The total count of all samples slightly decreased by the higher irradiation dose, the greater dose, the greater reduction.-267-C-The total count of all samples increasing during both two kinds of storage, the increasing in unirradiated samples higher than irradiated samples for all food stuffs under study.(7) Proteolytic bacteria: A- The Examination included the chicken, fresh fish and dry fish. B- Irradiation with (10.0 KGY) destroyed all viable cell. C- Irradiation dose at level (1.5 / 2.5 / 3.0 / 5.0 / 7.5 KGY) reduced the total count in all tested sample, the reducing increasing with irradiation dose increasing tested samples. The reducing increasing with the irradiation dose increasing, the higher dose, the greater reduction.D-The total count of all samples increasing during both two storage, the increased on unirradiated samples higher than irradiated samples. (8-14) Pathogenic bacteria: It included the: 1-Entero acteriaceae 2-Enterococccii spE 3-Conform group 4-Salmonella spp 5-Staphylococcus spp 6-Stereptococcus .s22 7-Clostridium sm.A- The total counts of control samples for previous pathogenic bacteria were very small on all tested samples. B- Smaller dose of gamma irradiation destroyed all the viable cells of pathogenic bacteria on all of tested food samples. C- Pathogenic bacteria on all samples increasing during storage (in both kind of storage), the increasing was higher in fresh food than in dry food samples.(15) Isolation and classification of Bacillus species:All bacterial isolates are subjected to extensive taxonomical studies and identified into different species according to Bergey’s manuals of determinative bacteriology (1996). Forty three species of Bacillus spp-268-