Abstract:-

Chitosan/silver nanoparticles not only have the microbial affects, but also have good safe guarantee in human edible and touchable fields. They possess microbial Activity, safety and nontoxic, odorless. This study aimed to design silver nanoparticles incorporated into chitosan with biopolymer to form thin films and used as microbial activity on hard cheese to increasing the shelf life. The spectroscopic characteristics of Silver/Chitosan/Polymer thin films were characterized by the Ultraviolet-Visible (UV-Vis) spectroscopy, Transmission Electron Microscopy (TEM), Scanning Electron Microscopy (SEM), Fourier Transform Infrared (FTIR), X-Ray diffraction (X-RAD) and thermo gravimetric analysis (TGA) spectroscopy, Stress and Elongation strength. The results obtained illustrated that, the microbial activity against different gram positive bacterial strains like Staphylococcus aurous, Bacillus subtilis, gram negative bacterial like Salmonella typhi, Escherichia coli and Candida Albicans and Aspergillus fumigatus increases with increasing the different concentrations of chitosan and silver nanoparticles in biopolymer thin films, respectively. The results showed that Silver / chitosan was found to be effective and improving the quality and prolonged shelf life ~ 57 % ±5 %.

Keywords: Silver nanoparticles, Chitosan, Polymer, Thin films, thermal, mechanical properties, antimicrobial activity, hard cheese.