



THE EFFECT OF PLANT DERIVED POLYMERS ON REDUCING THE AMOUNT OF *E. COLI*, ANIONS, CATIONS, AND DISSOLVED SOLIDS IN SURFACE WATER

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The presence of *Escherichia coli* as a fecal indicator in surface water can provide a preliminary idea of the water quality and its impact on public health. Current synthetic methods are expensive and harmful to the environment, pushing scientists and institutions to discover a natural, sound alternative for water treatment. The use of plant-derived polymers is important in determining cost-effective and environmentally sound methods of reducing the number of fecal coliforms in water. This experiment applies multiple polymers to water samples from the Bosque River in Stephenville City Park and the Colorado River in Timberlake Biological Field Station in Goldthwaite, Texas. The polymers include tamarind seed gum and fenugreek. The experiments begin with 1.5 grams of polymer in 300 milliliters of distilled water, then doubled to 3.0 grams in 300 milliliters. The *E. coli* is cultured using the modified mTEC method. The samples are also placed in an ion chromatography device to determine what anions and cations are present in the select locations. If these water sources are used for drinking water, there are quality standards that need to be met to ensure that human health is not compromised. Maximum contaminant levels (MLGs) are listed by the Environmental Protection Agency as a guideline of how much fluoride, chloride, magnesium, and other anions and cations is considered safe. The presence of bacteria, anions, and cations decreased in the treated samples. This indicates that polymers can be used as natural alternatives to current synthetic methods.