

**PREPARATION OF BIO-ACTIVE PACKAGING FILM USING
GELATIN BASED POLYMER AND SPENT COFFEE GROUND
EXTRACT (SCGE)**

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ABSTRACT

PREPARATION OF BIO-ACTIVE PACKAGING FILM USING GELATIN-BASED POLYMER AND SPENT COFFEE GROUND EXTRACT (SCGE)

Environmental damage caused by plastic waste and the resulting threats to aquatic life have created an increasing interest in replacing plastic with sustainable and biodegradable alternatives. This study examined the possibility of fabricating packaging films from abundant wastes, such as spent coffee grounds (SCG) and bio-plastics derived from gelatin. The films were produced using commercial gelatin impregnated with SCG extracts (SCGE) obtained via ultrasound assisted extraction (UAE) at different concentrations (0–20 %, w/w). Properties in terms of physio-chemical, optics, and function groups, as well as antioxidant and microbial activity have been determined. As the level of SCGE impregnation increased, the solubility in water, moisture content, and transmittance of the films decreased. The films showed high antioxidant activity levels of 15.49 %, 29.34 %, 35.72% and 54.14 % for films with 5 %, 10 %, 15 %, 20 % SCGE respectively. The antimicrobial activity for common food poisoning bacteria such as *Staphylococcus aureus*, and *Escherichia coli* have been investigated on the bio-plastic packaging film also shows positive results. Thus, these results demonstrated the potential of converting wastes into promising active packaging films that can be used in food packaging in future.