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Asesor: Dr. Eden Morales Narváez

Sinodales:
Dr. Eden Morales Narváez
(Director de Tesis, Secretario)

Dr. Mario Alejandro Rodríguez Rivera
(Sinodal Interno, Vocal)

Dra. Valeria Piazza
(Sinodal Interna, Presidenta del Jurado)

Tesis: **"PATHOGEN DETECTION VIA GRAPHENE OXIDE -BASED IMMUNOSENSING: DETERMINATION OF BACTERIA IN INDUSTRIAL SAMPLES OF FOOD"**

Resumen:

One of the major concerns of the food industry is the pathogenic bacterial contamination because it represents a risk to health of the consumer, it could cause several diseases and even death. E. coli is a bacteria found in environment, foods and intestine of people or animals. Most E. coli strains are harmless but some others can cause serious food poisoning. Currently, in food industry use culture based assays on differential culture media to determination of pathogenic bacterial to ensure the food quality and the consumer safety. Despite this method is very accurate, it is time consuming and expensive. The development of biosensors and biosensing platforms results as an alternative for the reduction of time and cost of the pathogenic bacteria detection in food. In this thesis, an optical biosensing platform based on Graphene Oxide (GO) is proposed aiming at detecting E. coli O157:H7, in food industry samples. The food industry samples were provided by "La Próxima Estación", a Mexican company dedicated to process frozen fruits and vegetables. The proposed biosensing platform reached a limit of detection (LOD) of 1.8 CFU mL-1 with a time response of 30 minutes. Also, it was demonstrated the selectivity of the antibody chosen as biorecognition element. Because of the matrix, for the real samples (vegetables such as spinach and cauliflower), it determined as positive or negative the presence of E. coli reaching a time response of 45 minutes.