

Tea catechin incorporated Graphene based novel bio-nanocomposites

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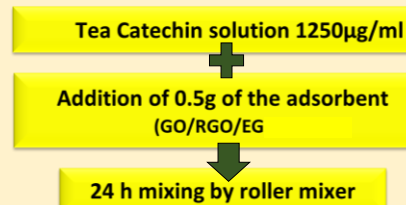
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Introduction

- Tea catechins (TC) are polyphenols found in tea leaf extracts which exhibit protective effects against many diseases
- Their usage in the native form is limited due to low rate of absorption, low solubility, low bioavailability & unstable nature
- We are focusing on incorporating tea catechins into graphene-based materials to synthesize novel bio nanocomposites and to assess their antimicrobial properties against selected bacteria and fungi causing superficial skin infections

Methodology

1. Nanocomposites synthesis – Adsorption method

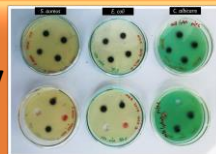


Absorbance at 267 nm

2. Characterization – FTIR, XRD

3. Antimicrobial test- Well diffusion assay

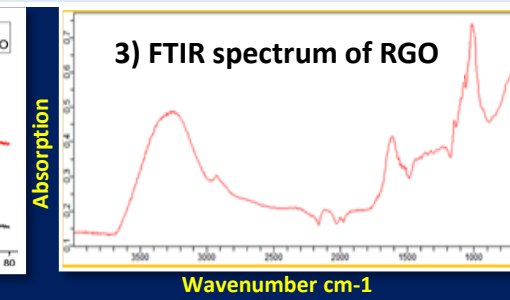
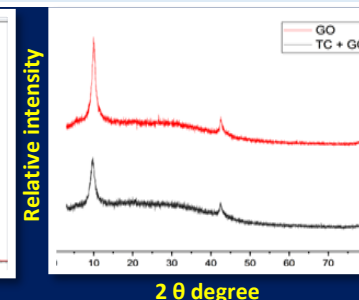
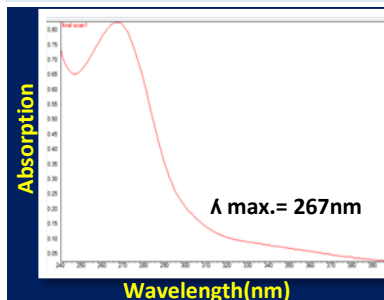
- ✓ *Staphylococcus aureus* (ATCC 25923)
- ✓ *Escherichia coli* (ATCC 25922)
- ✓ *Candida albicans* (ATCC 29212)
- ✓ Negative control - DMSO



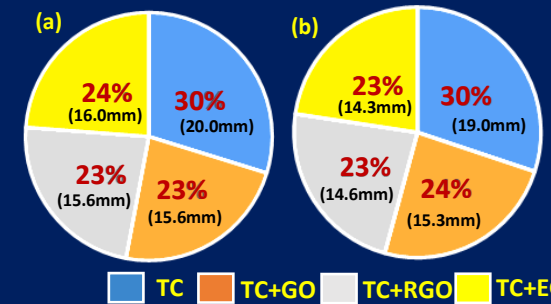
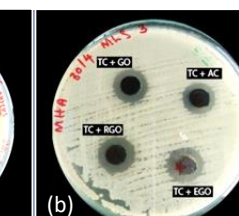
GO – Graphene Oxide
RGO – Reduced Graphene Oxide
EG- Expanded Graphite
ZOI-Zone Of Inhibition

- Kept in oven to dry
- Characterization
 - Antimicrobial testing

Results



4) No ZOI observed for negative control



Conclusions

- Staphylococcus aureus* and *Escherichia coli* are susceptible to the synthesized bio-nano composites and demonstrated the characteristics of slow and sustained release of the active compound- TC, from the nanocomposites
- These novel nanocomposites can be developed as in vitro antimicrobial agents with potential applications in the pharmaceutical industry