Title: Evaluation of the adsorption capacity of glyphosate in a microbial cellulose composite

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Introduction
Methodology

- Microbial cellulose synthesis
- Microbial Cellulose Composite p
- Crosslinkage process

Table 1. Reagents for the preparation of the modified HS culture medium.

<table>
<thead>
<tr>
<th>Reagents</th>
<th>Mass in grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruit peels</td>
<td>120</td>
</tr>
<tr>
<td>Yeast extract</td>
<td>2.5</td>
</tr>
<tr>
<td>Peptone</td>
<td>2.5</td>
</tr>
<tr>
<td>(\text{Na}_2\text{HPO}_4)</td>
<td>1.35</td>
</tr>
<tr>
<td>Citric acid</td>
<td>0.575</td>
</tr>
<tr>
<td>Saccharose</td>
<td>2.5</td>
</tr>
</tbody>
</table>
## Results

**Table 2.** Final concentration of glyphosate present in the samples after UV-VIS adsorption.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Glyphosate concentration (ppm)</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCM</td>
<td>125.125</td>
<td>±0.005</td>
</tr>
<tr>
<td>CCM4</td>
<td>89.75</td>
<td>0</td>
</tr>
<tr>
<td>CCM6</td>
<td>115.05</td>
<td>0</td>
</tr>
</tbody>
</table>
FTIR Results

Graph 4. Post-adsorption spectrum of microbial cellulose glyphosate.

Graph 5. Spectrum after commercial glyphosate adsorption with the composite CCM4.

Graph 6. Spectrum after commercial glyphosate adsorption with the composite CCM4.
SEM Results

Figure 5. Micrograph of microbial cellulose powder at 100X.

Figure 6. Micrograph of microbial cellulose powder at 5000X.

Figure 7. Micrograph of compound CCM4 a 1500X.
Annexes

1. Modified casting method.
   Using Sodium Phosphate, chitosan and citric acid.

2. Calibration curve for glyphosate quantification.
Conclusions

• SEM analysis showed differences in the physical characteristics of the MC compared to the composite developed herein.

• FTIR spectra show that the treatments present the characteristic bands of MC and Chitosan.

• Further research is required to fully understand the interaction between the commercial glyphosate and MC composites.
References


