



#D 17



Investigation of direct DRAQ5 DNA staining on sterilized and contaminated wood surface by confocal spectral microscopy

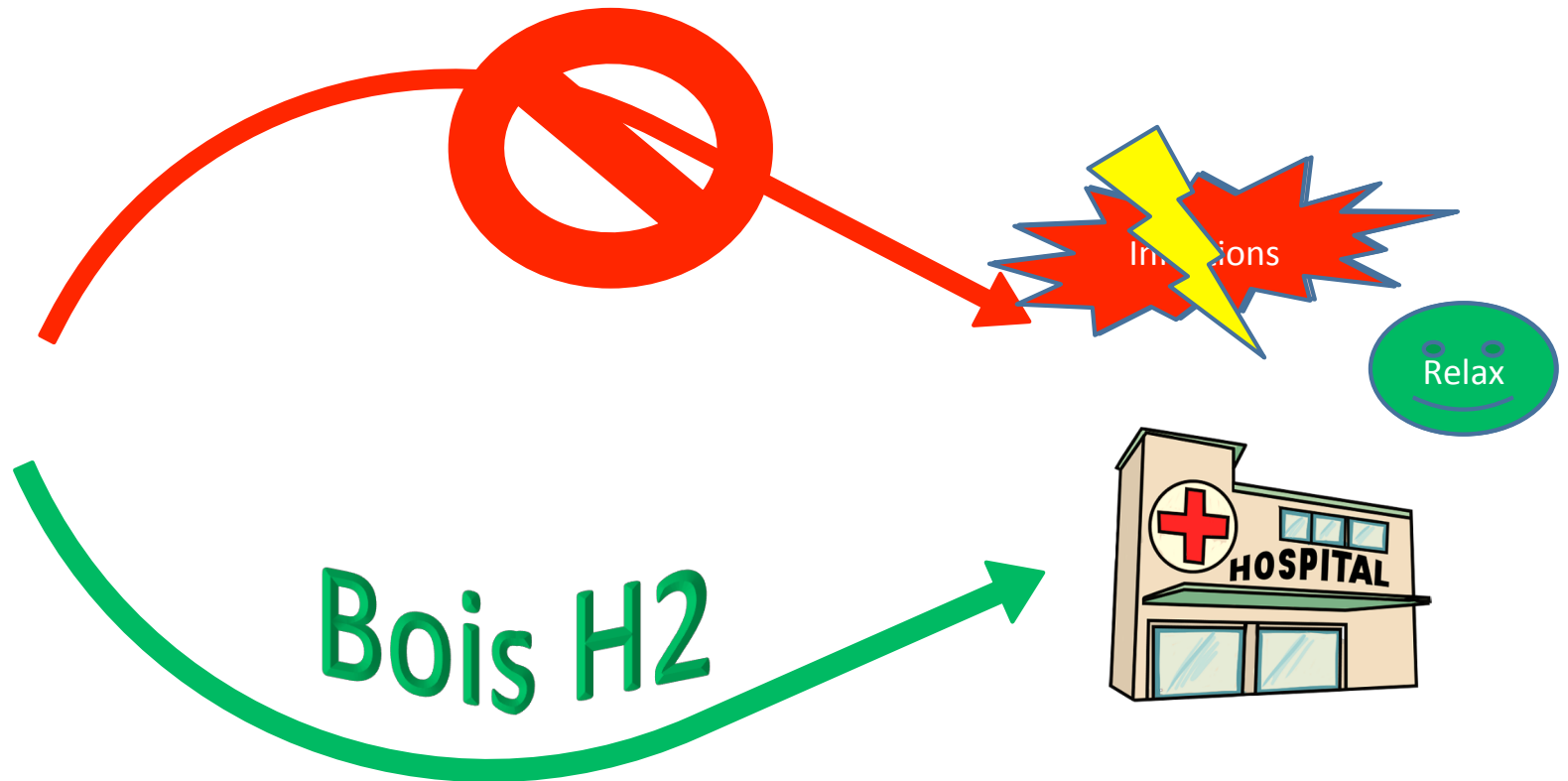
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20/12/18

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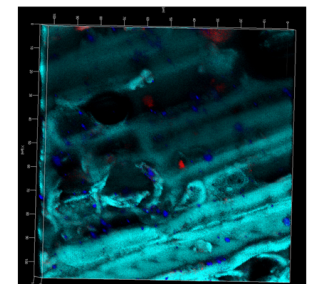
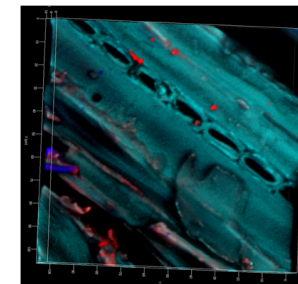
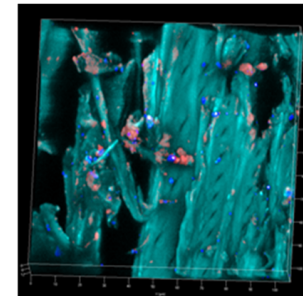
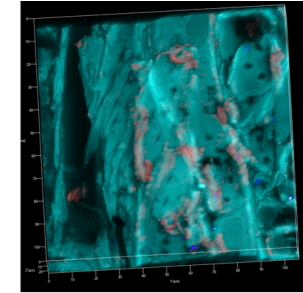
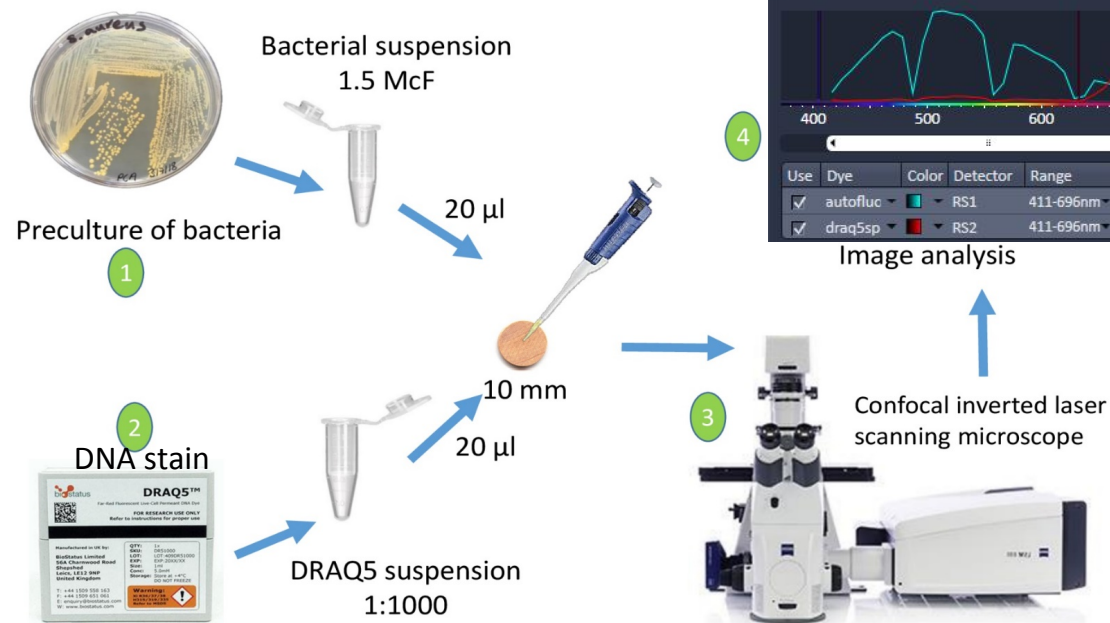
Wood and hospital hygiene (BoisH2)

Organic
Renewable
Restorative
Porous



Experiment

To develop a direct method to visualize hygienically important microbes on wood via confocal spectral microscopy



THANK YOU

Wood & Health

Direct DRAQ5 DNA staining on sterilized and contaminated wood surface, investigation by confocal microscopy

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BACKGROUND

The use of wood as a contact surface in hygienically sensitive places do not pose any health risk, however, the porous nature of this material is a big question regarding survivability of harmful microbes on it. In these situations, directly observing the microbes on wood can answer the question of their presence inside the pores.

OBJECTIVE

Developing a methodology of directly labeling the bacterial DNA on wood and observing via confocal microscope.

MATERIALS AND METHODS (Figure 1)

Oak (*Quercus petraea*) and **poplar** wood were selected since they are used as hygienically important contact surfaces in France and overall in Europe. The wood disc samples were in Sterilised (gamma irradiated and autoclaved) and non-sterilised form. **Gram +ive bacetria** (*Staphylococcus aureus*) and **Gram -ive bacetria** (*Escherichia coli*) were selected because of their importance regarding foodborne and nosocomial infections.

RESULTS

(Figure 2 and 3)

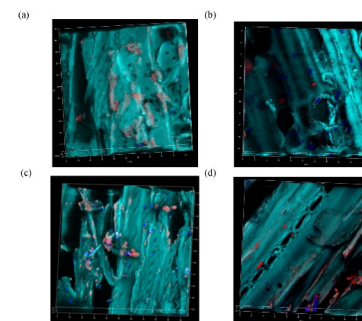


Figure 2: Confocal spectral image of wood labeled with DRAQ5. (a) Autoclaved oak (b) Gamma sterilized oak (c) Non-sterilized oak (d) Poplar gamma sterilized and then kept in non-sterile conditions (positive control)

— DRAQ5 — Contaminants/Extractives — Wood

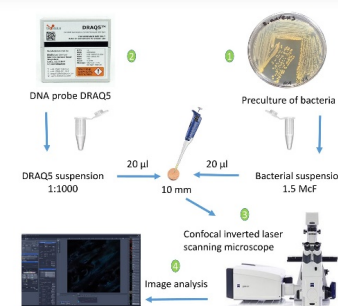


Figure 1. Methodology of direct labelling the microbes on wood to observe under confocal microscope

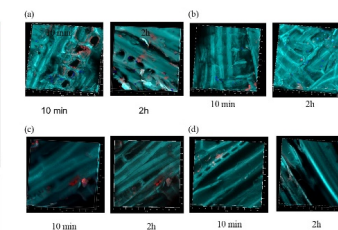


Figure 3: DRAQ5 staining of wood incubated previously with unlabeled *E. coli*, bacteria incubation time of 10 min and two hours: (a) Autoclaved (AC) oak (b) Gamma sterilized oak (G) oak (c) Non-sterilized (NS) oak (d) Poplar gamma sterilized and then kept in non-sterile conditions (positive control)

CONCLUSION

Inoculation of DRAQ on wood not only stains microbial DNA but also the wood DNA irrespective of sterilisation method, which makes it difficult to differentiate among two under confocal microscope and can also contaminate the molecular biology diagnosis

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