Enseignement – Recherche
Sciences & technologies du bois

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École Nationale Vétérinaire, Agroalimentaire et de l'Alimentation
Nantes Atlantique
Santé et alimentation au cœur de la vie

MICROBIAL SAFETY OF WOOD AS CONTACT SURFACE

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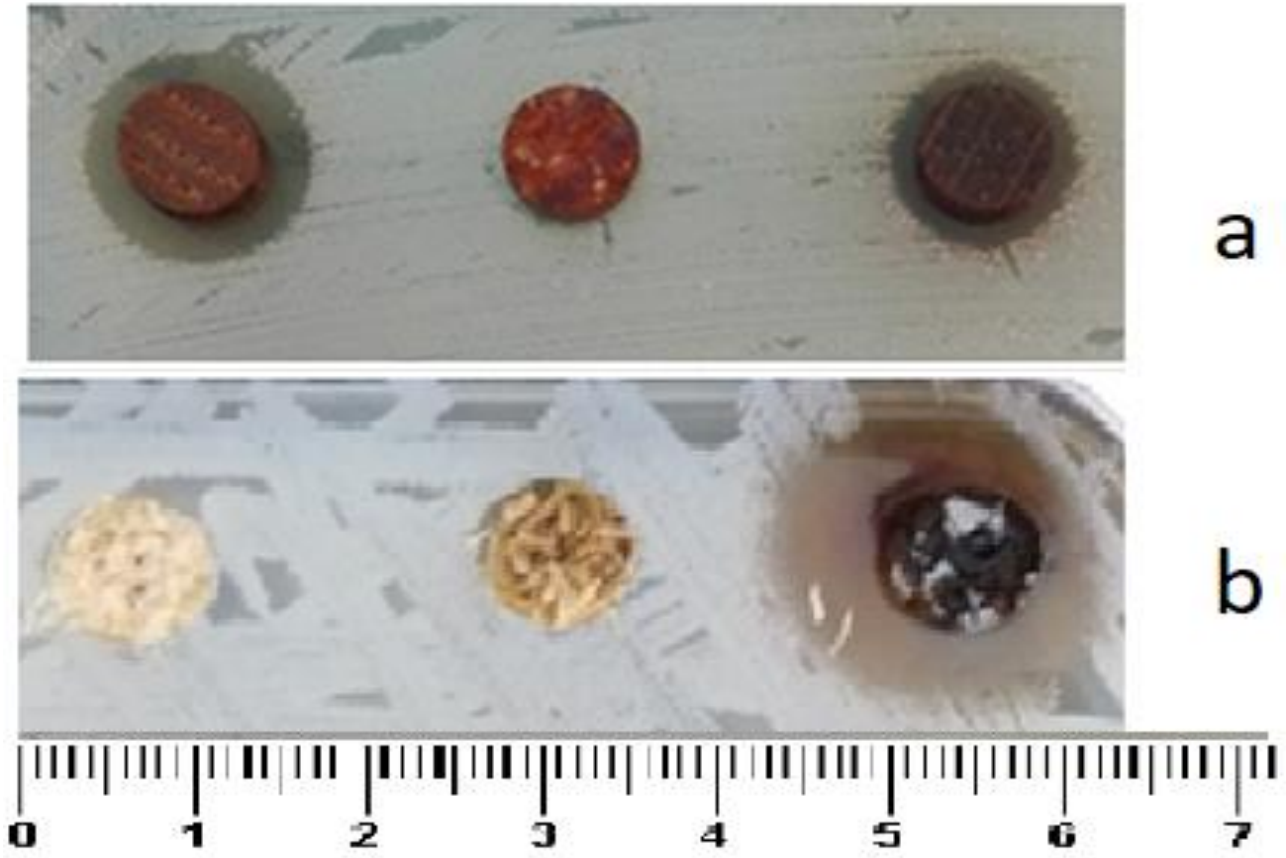
YouR-ResearcH
Bio-Scientific

- **Background:** An organic renewable construction material having restorative effects, but porosity is questioned
- **Aim**: To test antimicrobial properties of wood

- **Material and methods**:



- **Results**

Wood has antimicrobial properties

Safe?

THANK YOU

Wood & Health

Microbial Safety of Wood as Contact Surface

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BACKGROUND

Wood is a renewable resource which provides a restorative environment to inhabitants. However, this material is generally regarded as an unhygienic material to be used in hygienically sensitive places like hospitals, health institutes and food preparation surfaces, owing to the porosity which is questioned for microbial retention.

OBJECTIVE

This research investigates the chemical (extractive) and physical (structure) effects of wood against pathogens

MATERIALS AND METHODS

Ash (*Fraxinus excelsior*), **European Fir** (*Abies alba*) and **Gabon** (*Aucoumea klaineana*) wood were selected since they are used in various interior applications in France and overall in Europe.

Gram +ive bacetria (*Staphylococcus aureus-sensitive* and *Staphylococcus aureus multi resistant*) and **Gram –ive bacteria** (*Escherichia coli sensitive* – ATCC 25922 and *Escherichia coli resistant*- BLSA) were selected because of their importance regarding nosocomial infections in hospitals

Agar diffusion methods was used to test the antimicrobial potential of wood against bacteria.

RESULTS

Figure 1: Principle of antimicrobial sensitivity test (agar diffusion) using Müller-Hinton agar plates

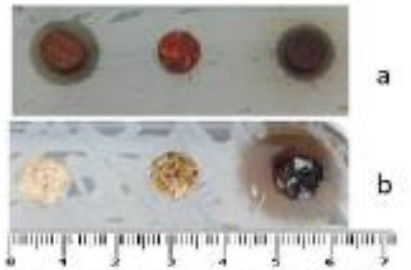

Figure 2: Agar diffusion method to test the antimicrobial activity of a) wooden discs b) sawdust against bacteria

CONCLUSION

Some wood species show antimicrobial activities which can stop infection transmissions and make it a safe material for indoor construction in hygienically sensitive places.

Table 1: Agar diffusion test results of antimicrobial activity of wooden discs and sawdust against bacteria

	pH	Structure	Mass (mg)	S. aureus ATCC 29213	SARM	E. coli ATCC 25922	E. coli BLSE
Ash (*Fraxinus excelsior*)	5.40	Disc LT	111.2±4.8	+	-	-	-
		Disc RT	106.9±1.9	+	-	-	-
		Saw dust		-	+	-	-
European Fir (*Abies alba*)	5.58	Disc LT	117.9±19.1	-	-	-	-
		Disc RT	93.7±18.8	+	-	-	-
		Saw dust		-	-	-	-
Okumé-Gabon (*Aucoumea klaineana*)	4.64	Disc*	86.7±3.4	+	-	-	-
		Saw dust		-	-	-	-

"+" Presence of antimicrobial effect, "-" No antimicrobial effect, "*" The definition of transversal and tangential cut not applicable, "SARM" *Staphylococcus aureus multi resistant*, "Disc LT" tangential cut, "Disc RT" Transversal cut

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