

Report of an experimental project  
**“Nara wood supports our healthy lives.”**



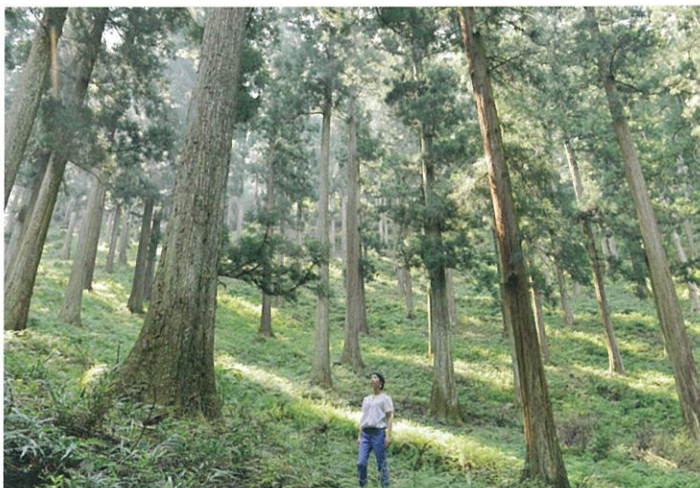
Japanese people have lived in wooden houses and used wooden tools for a long time.

Wood is a material for us to be close and familiar, and it is known to be effective for our health. But are there any scientific studies about it?

So, we tried some tests about Nara wood.

As results, Nara wood had the effects for the control of mold and bacteria growth, repellence of mites, non-activity of virus and reduction in ultra-violet rays. We concluded that Nara wood supported our healthy lives.

We will explain you about the test data.



Yoshino area in Nara pref. was the first place in Japan where forests were planted. The people living in this region have been developing the forests for about 500 years. Now, they produce high quality wood.



A nursery school made by Nara wood.



An old people's home made by Nara wood.



Houses made by Nara wood. (Photo provider: Yoshinomeibokuseizohanbai Co., Ltd. and Imura Co., Ltd.)

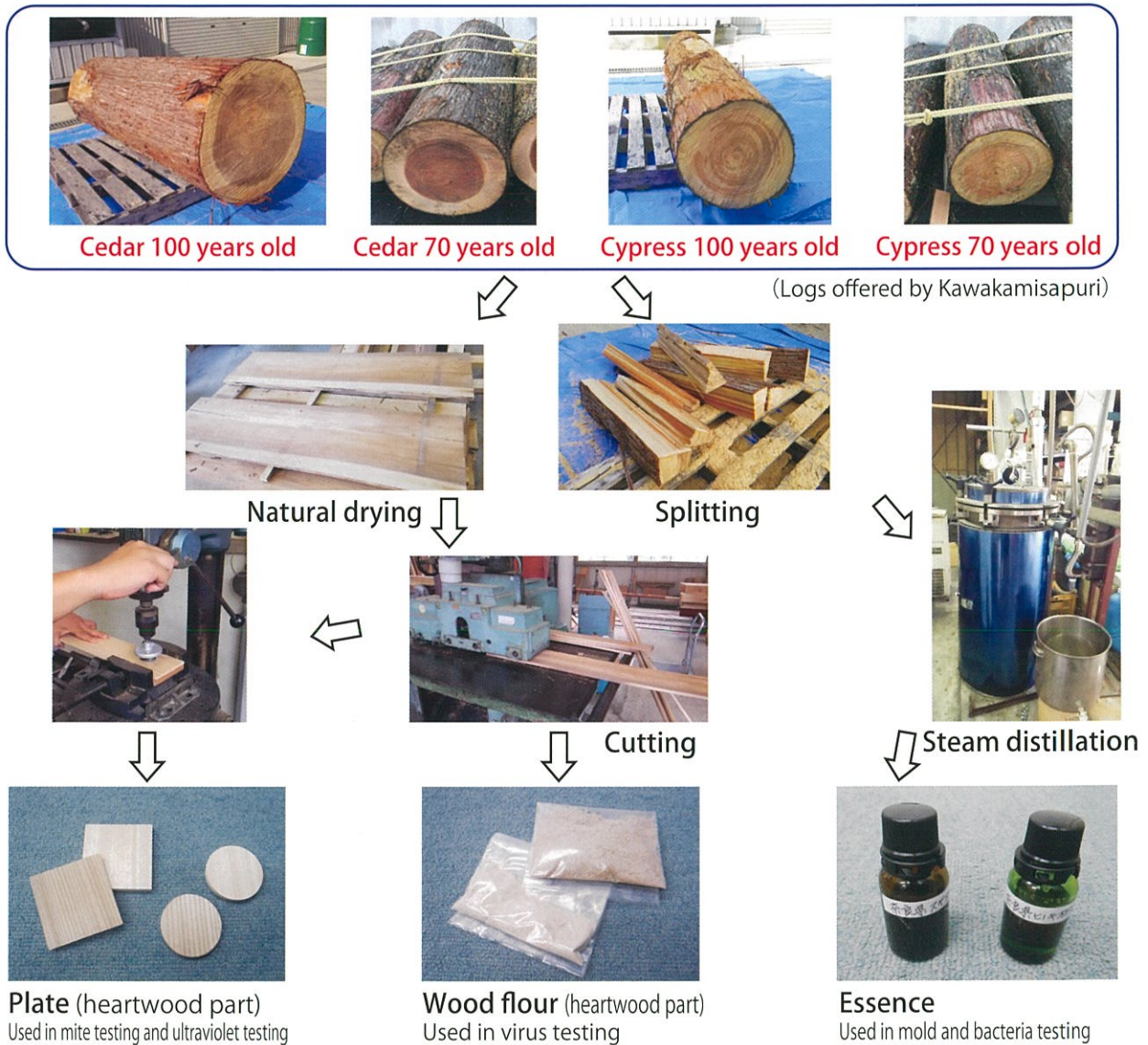
# Test Materials

## ① Nara Wood

- Japanese cedar grown in Nara prefecture (100 and 70 years old, grown in Kawakami village, Yoshino-gun, used to produce wood plates, wood flour, or essence)
- Japanese cypress grown in Nara prefecture (100 and 70 years old, grown in Kawakami village, Yoshino-gun, used to produce wood plates, wood flour, or essence)

## ② Control

Non-Nara cedar and cypress trees, the essence of non-Nara cedar or cypress (non-Nara means another prefecture), materials other than wood (carpet, etc.)

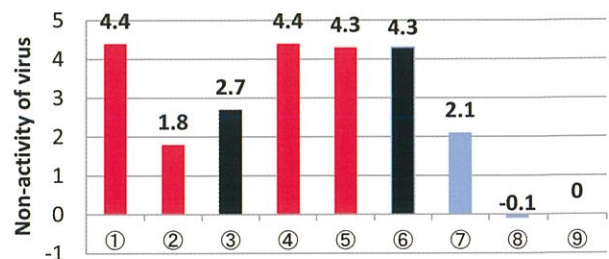


# Test Results

## Non-activity of virus

Method : Contact influenza A virus (H3N2) with the wood flour, iron powder or polypropylene powder and measure its activity.

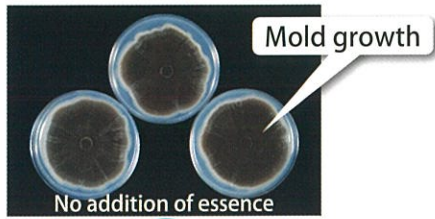
Result : The activity of virus decreased by contact with Nara cedar (70 years old) and cypress.



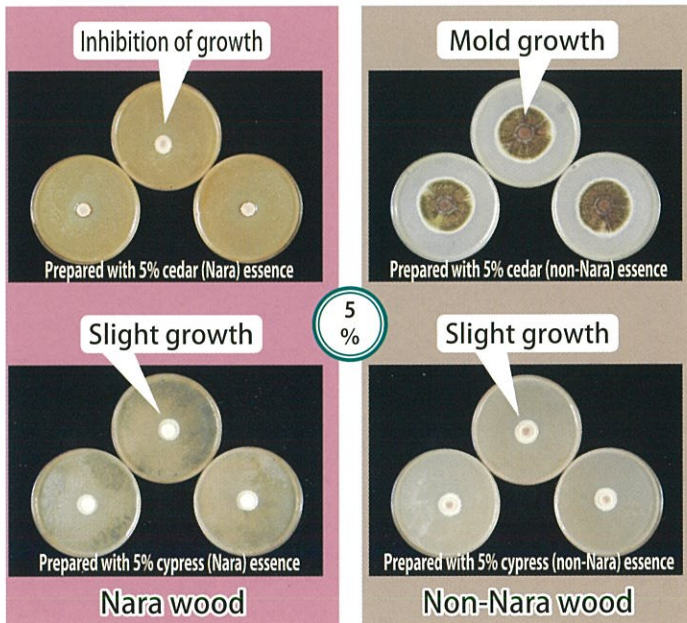
- ① Cedar, Nara (70 years old)
- ② Cedar, Nara (100 years old)
- ③ Cedar, non-Nara
- ④ Cypress, Nara (70 years old)
- ⑤ Cypress, Nara (100 years old)
- ⑥ Cypress, non-Nara
- ⑦ Iron powder
- ⑧ Polypropylene powder
- ⑨ Control (no material)

# Test Results

## Control of mold growth



0 %



Method : Plant mold at the center of the agar media and observe its growth in seven days.

Result : The growth of mold was completely inhibited by addition of the essence of Nara cedar. Mold grew with addition of the essence of non-Nara cedar.

### [Memo]

The above photos show the results of the test with *Aspergillus*. Cedar essence (Nara) showed the highest inhibition of growth against *Penicillium*. Either mold causes allergy diseases such as asthma or atopy.

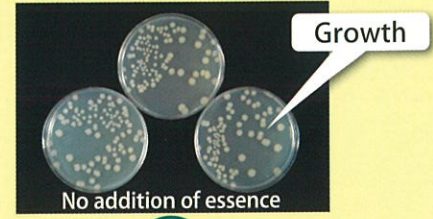


Optical microscopic photo of mold

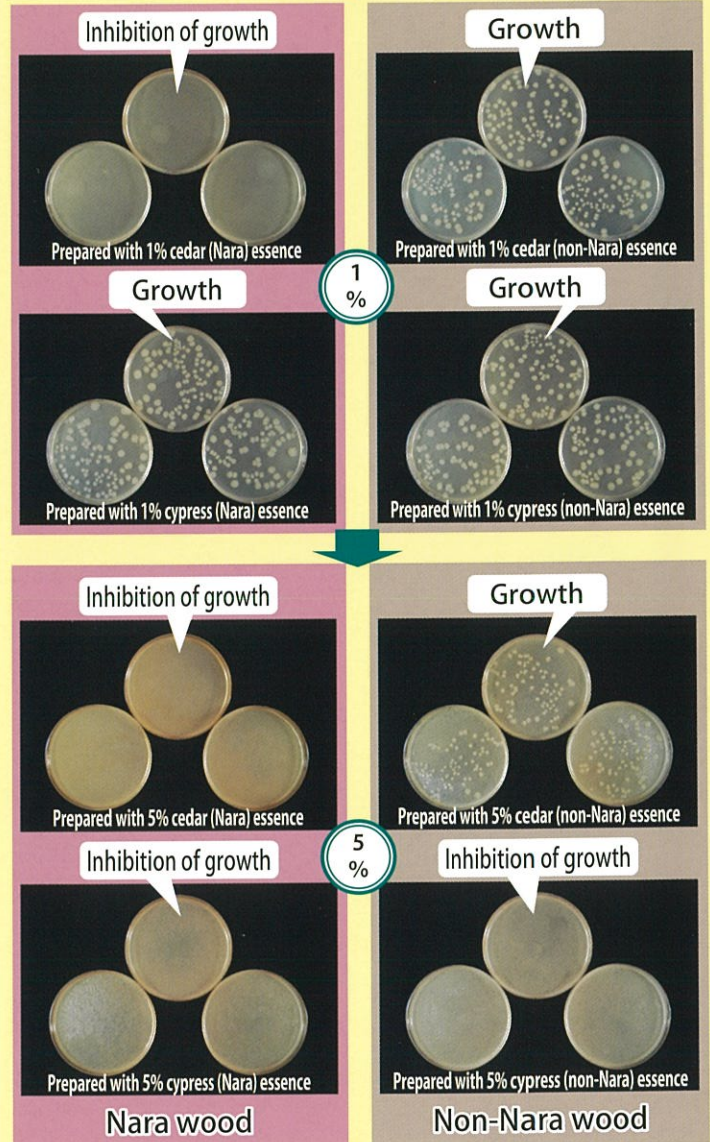
### [Memo]

Since the cedar wood (heartwood) contains 1 to 2% of essence and the cypress wood (heartwood) contains 4 to 5% of essence, it is presumed that Nara cedar or cypress is resistant to molds or bacteria. They are also good for chopping blocks and tableware.

## Control of *E.coli* growth



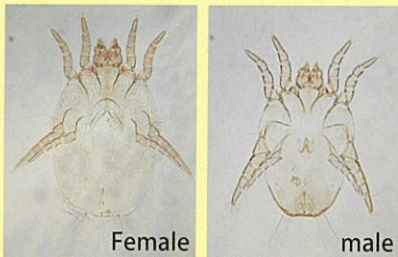
0 %



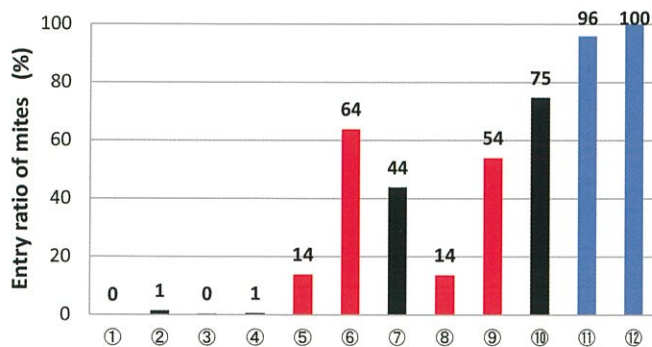
Method : Spray *E.coli* onto the agar media and observe the condition of growth in two days.

Result : The essence of Nara cedar is most effective in growth control of *E.coli*. Even 1% of either essence inhibited the growth of *Staphylococcus aureus* in a separate experiment.

## Repellence of mites



Optical microscopic photos of mites  
Length of a mite: 0.3 mm  
(Photo provider: Nihonkankyoueiseisenta)



- ① Filter paper (containing cedar essence), Nara
- ② Filter paper (containing cedar essence), non-Nara
- ③ Filter paper (containing cypress essence), Nara
- ④ Filter paper (containing cypress essence), non-Nara
- ⑤ Cedar, Nara (70 years old)
- ⑥ Cedar, Nara (100 years old)
- ⑦ Cedar, non-Nara
- ⑧ Cypress, Nara (70 years old)
- ⑨ Cypress, Nara (100 years old)
- ⑩ Cypress, non-Nara
- ⑪ Carpet fabric
- ⑫ Control (no material)

**Method :** Count the number of invading mites (*Dermatophagoides pteronyssinus*).

**Result :** Nara cedar essence and cypress essence are more effective in repelling mites than non-Nara ones. The number of mites that entered Nara cedar or cypress is about 1/6 to 2/3 of that entering carpet.

### [Memo]

When the flooring material is changed from carpet to Nara cedar or cypress, the occurrence of allergy diseases caused by mites (such as asthma or atopy) may be mitigated.

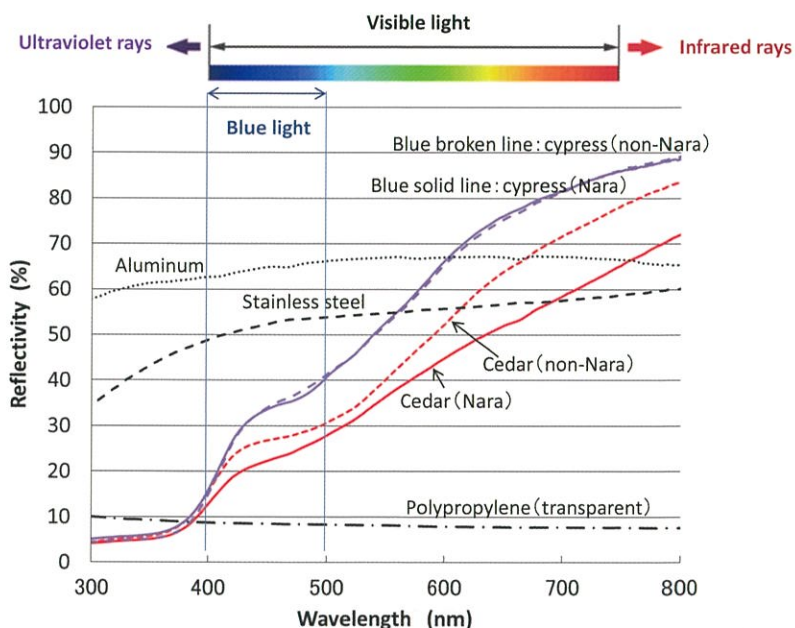
## Reduction in ultraviolet rays

**Method :** Apply light to the plate and measure reflections.

**Result :** Cedar and cypress produced either in Nara or other prefectures almost completely removed ultraviolet rays known to cause cataracts or age-related macular degeneration. They also reduced blue light that causes eyestrain or sleeping disorders.

### [Memo]

Use of Nara cedar or cypress for room walling or flooring materials will make your room easy on your eyes.



Since Nara wood is not a medicine, it cannot cure a person of a disease. But Nara wood will support our healthy lives and make living environment better.



A hospital room made by Japanese cedar. (Photo provider: Haruki Co., Ltd.)

Report of an experimental project  
**"Japanese cedar and cypress grown in Nara prefecture (Nara woods) support our healthy lives."**

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