

## Supplementary information

Fumigation and contact activities of 18 plant essential oils on *Villosiclava virens*, the pathogenic fungus of rice false smut

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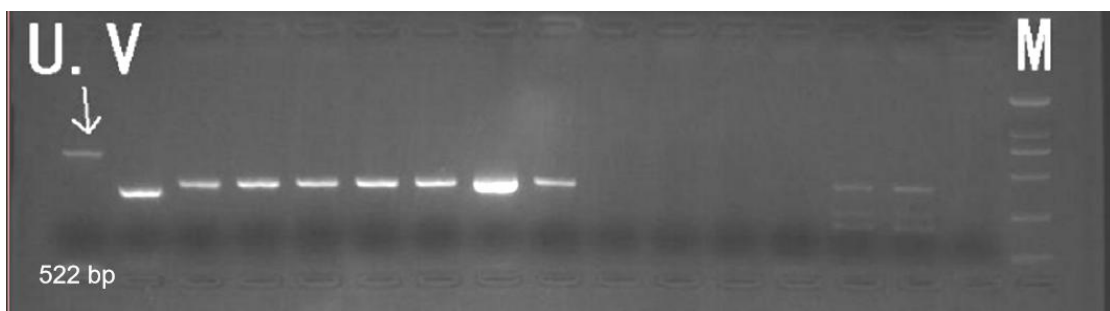
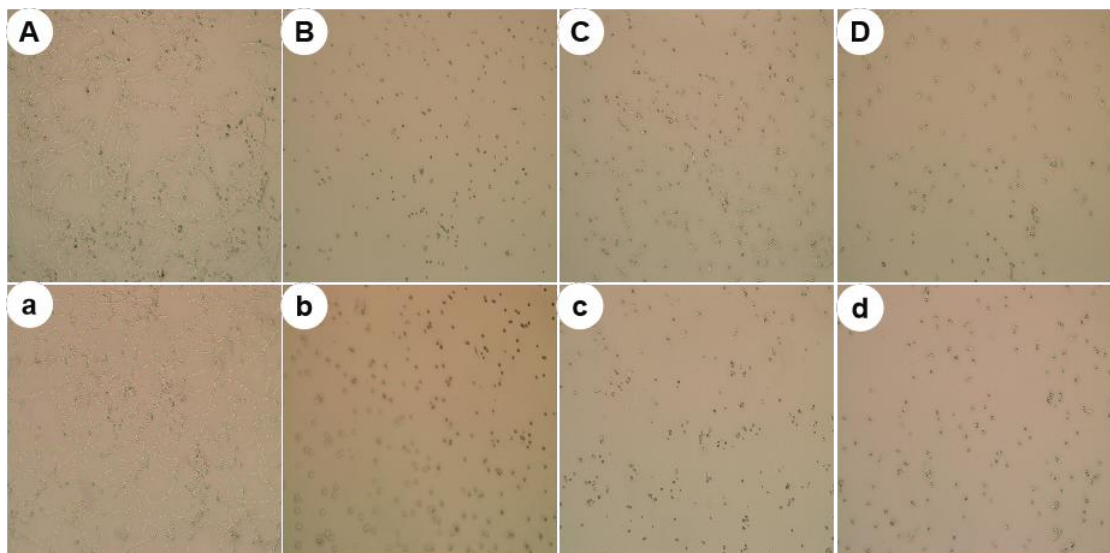
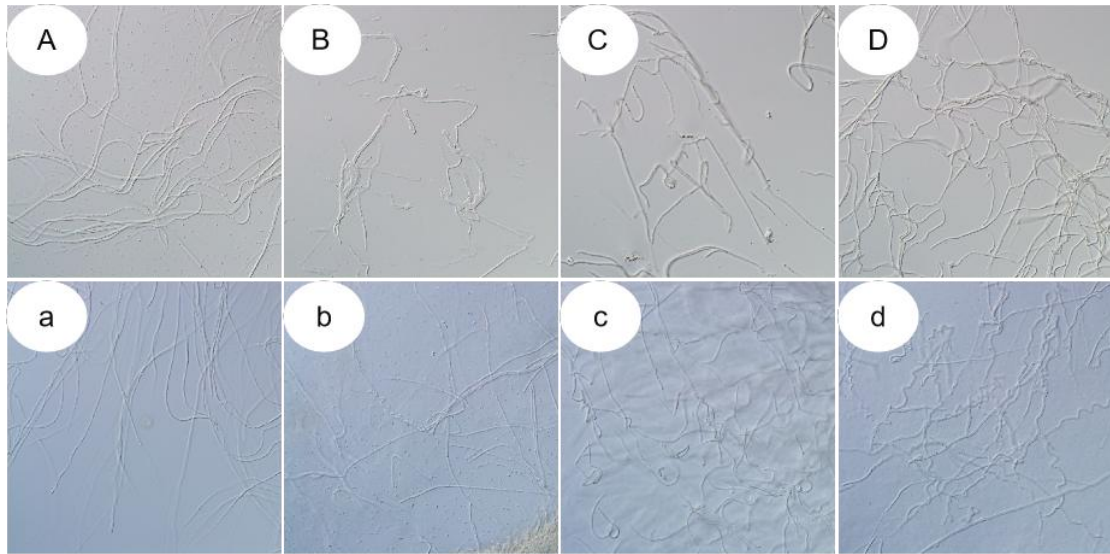
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This supplementary information file contains one supplemental table and three supplemental figures.

**Figure S1** The photographs with light microscope of *Villosiclava virens* hyphae. The pictures on the top are treated at 0.5  $\mu\text{L/L}$  air in the fumigation activity assay. A, Hyphae without PEOs or cinnamaldehyde (control). B-D, Hyphae treated with cinnamon bark oil, cinnamon oil and *trans*-cinnamaldehyde. On the bottom are treatments from the contact activity experiment at a concentration of 15  $\mu\text{g/mL}$ . a, Hyphae treated with acetone (CK). b-d, Hyphae treated with cinnamon bark oil, cinnamon oil and *trans*-cinnamaldehyde. All of the magnifications are  $\times 400$ .

**Figure S2** The photographs with light microscope of *Villosiclava virens* conidial spores. The pictures on the top are treated at 0.5  $\mu\text{L/L}$  air in the fumigation activity assay. A, Conidial spores without PEOs or cinnamaldehyde (control). B-D, Conidial spores treated with cinnamon bark oil, cinnamon oil and *trans*-cinnamaldehyde. On the bottom are treatments from the contact activity experiment at a concentration of 35  $\mu\text{g/mL}$ . a, Conidial spores treated with acetone (CK). b-d, Conidial spores treated with cinnamon bark oil, cinnamon oil and *trans*-cinnamaldehyde. All of the magnifications are  $\times 100$ .

**Figure S3** The results of identification specific gene sequences of the pathogen by agarose gel electrophoresis. The arrow pointed at the ribbon of the pathogen named as U.V. M means DL2,000 DNA marker.



**Table S1** The detailed data of conidial germination and inhibition in different treatment.( Na = the number of germinated conidia in the treated Petri plate, Nb = the number of all the germinated conidia in the treated Petri plate ).

<b>Concentration of essential oils ( µg/mL )</b>	<b>Germination rate (= 100* Na/Nb)</b>			<b>Average germination ( % )</b>	<b>Inhibition ( % )</b>
Control	100	100	100	100	0.00
Cinnamon oil - 28	82.6	88.4	64.0	78.3	21.7
Cinnamon oil - 30	57.0	73.0	69.0	66.3	33.7
Cinnamon oil - 32	49.0	29.0	53.0	43.7	56.3
Cinnamon oil - 34	11.0	13.0	25.0	16.3	83.7
Cinnamon oil - 36	3.00	1.00	1.00	1.67	98.3
Cinnamon bark oil - 32	86.9	64.4	44.3	65.1	34.9
Cinnamon bark oil - 34	52.4	50.8	28.5	43.9	56.1
Cinnamon bark oil-36	5.80	4.00	5.00	5.00	95.0
Cinnamon bark oil -38	7.90	4.00	1.00	4.50	95.5
<i>Trans</i> -cinnamaldehyde-32	98.1	99.2	95.4	97.5	2..50
<i>Trans</i> -cinnamaldehyde-34	91.9	93.7	94.3	93.3	6.70
<i>Trans</i> -cinnamaldehyde-36	17.4	42.7	45.5	35.2	64.8
<i>Trans</i> -cinnamaldehyde-38	21.2	18.3	19.7	19.7	80.3