

1

Supplementary Data

2

Chemical Constituent and Antibacterial Activities of Wood Vinegars in Different Pyrolysis Temperature Ranges Obtained from *Eucommia ulmoides* Olivers Branches

3

4

5

6

Xiaomei Hou ^{a,b}, Ling Qiu ^{a,b,*}, Shihai Luo ^{a,b}, Kang Kang ^a, Mingqiang Zhu ^a, Yiqing
Yao ^{c,**}

7

8

9

^a *College of Mechanical and Electronic Engineering, Northwest A&F University,*

10

Yangling712100, China.

11

^b *Northwest Research Center of Rural Renewable Energy, Exploitation and Utilization of*

12

Ministry of Agriculture, Northwest A&F University, Yangling712100, China.

13

^c *Department of Biological Systems Engineering, Washington State University, Pullman,*

14

WA 99164-6120, USA.

15

16

*Corresponding authors at the College of Mechanical and Electronic Engineering,

17

Northwest A&F University, Yangling, Shaanxi 712100, China

18

Tel.: +8613992873650. E-mail address: xbgzzh@163.com.

19

**Corresponding author at the Department of Biological Systems Engineering, Washington

20

State University, Pullman, WA 99164-6120, USA.

21

Tel.: þ86 13992873650; 509-339-4927. E-mail address: dzhtyao@126.com.

22 List of tables

23 Table S1. Results of GC–MS analysis of WV_{90~120}~ WV_{270~300}.

No	Compounds	Relative percentage (%)						
		WV _{90~120}	WV _{120~150}	WV _{150~180}	WV _{180~210}	WV _{210~240}	WV _{240~270}	WV _{270~300}
	<i>Phenols</i>	<i>47.25</i>	<i>44.41</i>	<i>48.69</i>	<i>45.44</i>	<i>15.45</i>	<i>42.37</i>	<i>34.45</i>
1	Phenol	2.98	3.95	4.48	3.57	1.06	0.67	0.45
2	2-Methyl-phenol	3.01	1.40	1.91	1.71	-	0.52	-
3	3-Methyl-phenol	-	3.50	4.13	3.52	0.62	-	-
4	4-Methyl-phenol	-	-	-	-	-	1.03	-
5	Hydroquinone	0.86	0.48	-	-	-	-	-
6	1,2-Benzenediol	6.52	2.67	2.38	-	-	0.66	0.67
7	2,6-Dimethyl-phenol	-	-	-	-	0.35	0.34	-
8	2,3-Dimethyl-phenol	-	-	-	-	6.05	-	-
9	2,4-Dimethyl-phenol	0.30	0.60	0.61	0.83	-	0.37	-
10	3,4-Dimethyl-phenol	0.32	0.49	0.83	0.86	0.83	-	-
11	2-Methoxy-phenol	8.21	10.71	11.90	11.84	0.57	4.35	3.63
12	3-Methoxy-phenol	0.55	0.63	0.65	-	-	-	-
13	Maltol	0.67	0.40	0.36	0.43	-	0.94	0.85
14	4-Ethyl-3-methyl-phenol	-	-	0.44	-	-	-	-

15	2-Methoxy-5-methyl-phenol	10.90	6.62	7.44	8.12	1.86	3.79	2.87
16	3-Methoxy-1,2-benzenediol	3.68	3.00	2.48	1.04	-	0.71	1.00
17	3,4-Dimethoxy-phenol	1.34	-	-	1.13	-	0.51	-
18	4-Ethyl-2-methoxy-phenol	2.13	2.20	3.27	3.64	3.10	3.77	3.24
19	2,6-Dimethoxy-phenol	4.08	6.27	6.86	6.62	0.35	7.75	8.14
20	(E)-2-Methoxy-4-(1-propenyl)-phenol	-	-	-	-	-	2.90	0.95
21	Eugenol	-	-	-	-	-	-	0.73
22	3-Allyl-6-methoxy-phenol	-	-	-	-	-	1.06	-
23	2-Ethyl-4-methyl-phenol	-	-	-	-	0.66	-	-
24	2-Methoxy-4-propyl-phenol	0.97	0.43	-	-	-	1.06	1.09
25	5-Tert-butylpyrogallol	0.73	0.76	0.95	1.34	-	-	-
26	2,6-Dimethoxy-4-(2-propenyl)-phenol	-	-	-	-	-	7.86	7.16
27	Desaspidinol	-	0.30	-	0.79	-	4.08	3.67
	Organic acids	3.16	4.86	2.98	2.92	5.81	6.33	1.05
28	Butanoic acid	1.77	1.34	0.72	-	-	-	-
29	Pentanoic acid	-	0.66	0.58	0.56	0.64	-	-
30	4-Hydroxy-2-pentenoic acid	-	-	-	0.70	-	-	-
31	Hexanoic acid	0.59	-	-	-	0.60	-	-
32	5-amino-Pyrazole-4-carboxylic acid	-	-	-	-	-	0.34	-
33	4-Methyl-pentanoic acid	-	-	-	-	1.63	-	-

34	2-Methyl-propanoic-acid, anhydride	-	-	-	0.55	1.99	1.35	-
35	Butanoic acid, anhydride	-	1.76	1.68	1.11	0.95	0.59	0.67
36	3-Hydroxy-4-methoxy-benzoic acid	-	-	-	-	-	4.05	-
37	4-Hydroxy-3-methyl-benzeneacetic acid	0.80	0.53	-	-	-	-	-
38	2-Methyl-cyclopentanecarboxylic acid,	-	-	-	-	-	-	0.38
39	[1,2,3]Thiadiazole-4-carboxylic acid	-	0.57	-	-	-	-	-
	<i>Ketones</i>	27.12	23.22	19.73	19.94	11.41	18.48	19.83
40	Cyclopentanone	1.38	1.75	1.76	1.71	-	0.48	0.37
41	2(5H)-Furanone	0.72	0.63	0.35	0.51	-	-	1.07
42	2-Methyl-2-cyclopenten-1-one	1.19	1.58	1.55	1.43	4.01	3.20	-
43	5-Methyl-2-furancarboxaldehyde	-	-	-	-	-	-	2.03
44	2-Cyclohexen-1-one	-	-	-	-	0.44	-	-
45	2-Methyl-cyclopentanone	0.45	0.62	-	-	-	-	-
46	4-Methyl-5H-furan-2-one	0.32	-	-	-	-	-	-
47	5-Methyl-2(3H)-furanone	1.23	1.02	-	-	-	-	-
48	5-Methyl-2(5H)-furanone	0.35	-	-	-	0.62	-	-
49	(R)-(+)-3-Methyl-cyclopentanone	-	-	-	0.39	-	-	-
50	3-Methylene-2-pentanone	-	-	-	-	-	-	0.30
51	Cyclohexanone	-	-	-	0.46	-	-	-
52	1-(2-Furanyl)-ethanone	1.77	1.91	2.03	2.05	1.01	1.82	0.80

53	3,4-Dimethyl-2-cyclopenten-1-one	0.84	0.81	1.50	1.10	-	-	-
54	2,3-Dimethyl-2-cyclopenten-1-one	0.99	1.56	1.72	1.57	1.27	0.56	0.46
55	2,5-Dihydro-3,5-dimethyl-2-furanone	0.95	1.05	0.98	0.75	1.42	0.41	0.49
56	2-Hydroxy-3-methyl-2-cyclopenten-1-one	5.54	5.31	4.30	2.92	-	2.06	2.55
57	1-Methyl-2-piperidinone	-	-	-	-	-	-	0.88
58	4-Acetyl-5-methyl-1,3-dihydro-2H-imidazol-2-one	0.43	-	-	-	-	-	-
59	1-(Acetyloxy)-2-propanone	1.16	0.95	0.86	1.76	-	-	-
60	2,3,4-Trimethyl-2-cyclopenten-1-one	-	-	-	-	1.07	-	-
61	3-Ethyl-2-hydroxy-2-cyclopenten-1-one	3.15	2.85	2.37	1.59	0.30	0.91	1.45
62	2,5-Dimethyl-4-hydroxy-3(2H)-furanone	-	-	-	-	-	0.32	-
63	1,2-Cyclopentanedione	-	-	0.54	-	0.70	1.22	2.20
64	2-Hydroxy-3-propyl-2-cyclopenten-1-one	-	-	0.36	0.32	0.57	-	-
65	3,4-Dimethyl-2,5-hexanedione	-	0.51	-	-	-	-	-
66	4-Hydroxy-2-methyl-acetophenone	-	-	-	-	-	-	0.33
67	7-Methyloctane-2,4-dione	0.60	-	-	-	-	-	-
68	2,5-Dihydroxypropiophenone	-	-	-	-	-	0.54	-
69	1-(4-Hydroxy-3-methoxyphenyl)-ethanone	0.55	0.44	0.35	0.40	-	0.69	0.64
70	2-Hydroxy-3-methyl-6-(1-methylethyl)-2-cyclohexen-1-one	0.66	0.43	-	-	-	-	-
71	1-(4-Hydroxy-3-methoxyphenyl)-2-propanone	1.41	1.20	1.03	1.67	-	0.39	-
72	3',5'-Dimethoxyacetophenone	-	-	-	-	-	0.35	0.68

73	2',4'-Dihydroxy-3'-methylpropiophenone	-	-	-	-	-	0.48	0.31
74	4H-1,3-benzodioxin-4-one	-	-	-	-	-	-	0.58
75	5-Dimethyl-4H-1,3-benzodioxin-4-one	-	-	-	0.81	-	-	-
76	Hexahydro-4a,5-dimethyl-4H-1,3-benzodioxin-4-one	1.63	-	-	-	-	--	-
77	6,6-Dimethyl-2-(2-oxopropyl)-bicyclo[3.1.1]heptan-3-one	-	-	-	-	-	0.42	-
78	1-(4-Hydroxy-3,5-dimethoxyphenyl)-ethanone	-	-	-	0.50	-	2.15	2.11
79	1-(4-Isopropoxy-3-methoxyphenyl)-propan-2-one	-	-	-	-	-	2.48	2.05
80	9-Ethoxy-10-oxatricyclo[7.2.1.0(1,6)]dodecan-11-one	-	-	-	-	-	-	0.53
	<i>Aldehydes</i>	7.32	4.24	11.34	15.98	7.17	9.32	6.79
81	Furfural	4.13	-	-	-	-	4.58	4.49
82	3-Furaldehyde	-	-	7.48	9.58	0.48	-	-
83	2-Methyl-cyclopentanone	-	0.62	-	-	-	-	-
84	5-Methyl-2-furancarboxaldehyde,	2.60	3.10	3.32	4.31	-	-	-
85	3-Hydroxy-benzaldehyde	-	-	-	-	0.98	-	-
86	5-(Hydroxymethyl)-2-furancarboxaldehyde	-	-	-	-	2.71	0.68	0.51
87	Vanillin	0.59	0.52	0.54	0.83	-	0.51	-
88	5-Acetoxy-methyl-2-furaldehyde	-	-	-	0.35	3.00	0.56	0.43
89	3-(4-Hydroxy-3-methoxyphenyl)-2-propenal	-	-	-	-	-	0.72	-
90	4-Hydroxy-3,5-dimethoxy-benzaldehyde	-	-	-	0.91	-	1.46	1.01

91	3,5-Dimethoxy-4-hydroxycinnamaldehyde	-	-	-	-	-	0.81	0.35
	<i>Alcohols</i>	7.57	5.44	3.70	3.74	0.53	4.73	6.89
92	3-Furanmethanol	2.91	3.14	0.37	3.39	-	3.43	4.29
93	2-Furanmethanol	2.69	-	2.78	-	-	0.59	-
94	Cyclopropanemethanol	-	2.30	-	-	-	-	-
95	2,3-Dimethyl-cyclohexanol	-	-	-	-	0.53	-	-
96	1,2,2,3-Tetramethylcyclopent-3-enol	-	-	-	0.35	-	-	-
97	4-Propyl-1,6-heptadien-4-ol	-	-	-	-	-	-	1.77
98	2,4-Dimethoxybenzyl alcohol	-	-	-	-	-	-	0.32
99	1-Butyl-3-methyl-2-cyclohexen-1-ol	-	-	-	-	-	0.33	-
100	6-Methyl-5-(1-methylethyl)-3-heptyne-2,5-diol	0.50	-	-	-	-	-	-
101	2,5-Dimethyl-cyclohexanethiol	-	-	-	-	-	-	0.51
102	2-Ethyl-cyclohexanethiol, acetate	-	-	-	-	-	0.38	-
103	2,5-Dimethyl-2-nitro-1,3-cyclohexanediol	-	-	0.55	-	-	-	-
104	P-octyloxybenzyl alcohol	1.47	-	-	-	-	-	-
	<i>Esters</i>	0.88	0.89	2.82	1.18	10.48	5.64	6.09
105	Propanoic acid, ethenyl ester	0.88	0.89	0.80	0.65	0.65	0.53	0.62
106	2-Oxo-propanoic acid, ethyl ester	-	-	-	-	0.61	-	0.30
107	2-Methyl-propanoic acid, ethyl ester	-	-	-	-	-	0.32	0.42
108	Methyl 2-furoate	-	-	0.38	0.53	-	-	0.51

109	1,2-Ethanediol, diacetate	-	-	-	-	0.76	2.20	2.08
110	Pentanedioic acid, dimethyl ester	-	-	-	-	0.65	-	-
111	Ethyl 3-(2-furyl)propenoate	-	-	-	-	-	-	0.31
112	Isopentyloxyethyl acetate	-	-	-	-	6.94	-	-
113	Butanoic acid, 2-ethylcyclohexyl ester	-	-	1.64	-	-	-	-
114	Disulfide, bis(1,1-dimethylpropyl)	-	-	-	-	0.51	-	-
115	2-Thiopheneacetic acid, cyclopentyl ester	-	-	-	-	-	1.12	-
116	Methyl(3,4-dimethoxyphenyl)(hydroxy)acetate	-	-	-	-	-	1.47	1.95
117	Pentanoic acid, 2,2,4-trimethyl-3-carboxyisopropyl, isobutyl ester	-	-	-	-	0.36	-	-

24

25

26 Table S2. Results of GC–MS analysis of WV_{300–330}~WV_{480–510}.

No	Compounds	Relative percentage (%)						
		WV _{300–330}	WV _{330–360}	WV _{360–390}	WV _{390–420}	WV _{420–450}	WV _{450–480}	WV _{480–510}
	<i>Phenols</i>	35.50	38.58	45.67	37.75	42.13	44.91	48.80
1	Phenol	0.34	0.30	0.67	0.77	1.27	2.18	2.64
2	2-Methyl-phenol	-	0.62	0.31	0.58	0.88	0.97	1.20
3	3-Methyl-phenol	-	1.08	1.26	-	1.10	2.28	2.59
4	4-Methyl-phenol	1.48	-	-	0.81	-	-	-
5	1,2-Benzenediol	3.87	5.26	-	-	-	-	-
6	Hydroquinone	0.61	1.28	0.61	0.73	-	1.27	0.58
7	2,5-Dimethyl-phenol	-	-	-	1.08	0.83	0.80	-
8	3,5-Dimethyl-phenol	-	-	-	0.49	-	-	0.76
9	2-Methyl-1,3-benzenediol	-	-	-	-	0.74	-	3.45
10	2-Methoxy-phenol	3.75	4.05	4.75	4.01	8.39	7.43	7.53
11	Maltol	1.20	1.22	0.77	0.50	-	-	0.51
12	2-Methoxy-3-methyl-phenol	-	-	-	1.01	1.21	-	-
13	2-Methoxy-4-methyl-phenol	-	-	-	4.32	4.43	-	-
14	2-Methoxy-5-methyl-phenol	3.08	3.02	4.96	0.77	1.21	4.27	3.71
15	4-Methoxy-3-methyl-phenol	-	0.54	-	-	-	-	-
16	3-Methoxy-1,2-benzenediol	2.38	3.75	3.66	1.75	-	6.50	7.08

17	4-Ethyl-2-methoxy-phenol	2.69	2.71	4.50	5.48	3.76	5.78	4.88
18	4-(Aminomethyl)-2-methoxy-phenol	-	-	-	-	-	-	0.44
19	2,6-Dimethoxy-phenol	7.35	7.31	9.85	10.12	12.14	10.55	10.87
20	3,4-Dimethoxy-phenol	-	-	-	-	0.95	-	-
21	3-Allyl-6-methoxyphenol	-	-	0.49	-	-	-	-
22	(E)-2-Methoxy-4-(1-propenyl)-phenol	-	-	2.37	0.99	0.42	-	-
23	(E)-2-Methoxy-5-(1-propenyl)-phenol	0.52	0.36	-	-	-	-	-
24	2-Methoxy-4-propyl-phenol	1.92	2.60	1.57	-	1.10	-	-
25	3-(1,1-Dimethylethyl)-4-methoxy-phenol	-	-	-	0.70	-	-	-
26	5-Tert-butylpyrogallol	-	-	5.02	-	-	2.19	1.93
27	2,6-Dimethoxy-4-(2-propenyl)-phenol	4.15	3.03	3.28	2.35	1.79	-	-
28	2,4-Bis(1,1-dimethylethyl)-Phenol	-	-	-	-	0.52	-	-
29	Desaspidinol	2.16	1.45	1.60	1.30	1.39	0.69	0.63
	Organic acids	0.00	0.34	1.50	4.39	1.33	2.03	4.39
30	Butanoic acid	-	0.34	0.89	1.77	-	1.09	2.38
31	Pentanoic acid	-	-	-	-	0.43	-	-
32	4-Hydroxy-butanoic acid	-	-	-	-	-	0.94	1.13
33	3-Hydroxy-3-methylvaleric acid	-	-	-	-	-	-	0.88
34	2-Methyl-propanoic acid, anhydride	-	-	-	1.72	-	-	-
35	4-Hydroxy-3-methoxy-benzoic acid	-	-	-	-	0.44	-	-

36	2-(N-Methyl-N-phosphonomethyl)amino-acetic acid	-	-	0.61	0.90	-	-	-
37	Bicyclo[2.2.1]heptane-1,2-dicarboxylic acid	-	-	-	-	0.46	-	-
	<i>Ketones</i>	21.72	22.03	16.15	19.10	24.56	15.72	16.80
38	Cyclopentanone	-	0.39	-	-	0.33	0.81	-
39	2(5H)-Furanone	1.51	1.51	0.66	0.48	-	0.51	0.65
40	5-Methyl-2-furancarboxaldehyde	-	1.91	-	-	-	-	-
41	2-Methyl-2-cyclopenten-1-one	-	0.93	0.57	1.39	0.80	0.71	0.85
42	2-Methyl-2-cyclopenten-1-one	1.17	-	-	-	1.66	0.96	1.18
43	5-Methyl-2(3H)-furanone	0.31	-	-	-	1.06	-	-
44	2-Methyl-cyclopentanone	-	-	-	-	0.74	0.54	0.60
45	4-Methyl-5H-furan-2-one	-	0.34	-	-	-	-	-
46	1-(2-Furanyl)-ethanone	0.94	0.83	0.93	-	-	-	-
47	3,3-Dimethyl-2-butanone	-	-	-	0.89	-	-	-
48	2,3-Dimethyl-2-cyclopenten-1-one	0.61	-	0.88	-	1.56	1.06	1.43
49	2-Cyclopenten-1-one	-	-	-	0.93	0.72	0.75	1.23
50	2,5-Dihydro-3,5-dimethyl-2-furanone	0.68	0.60	0.48	0.35	-	0.31	0.44
51	2-Hydroxy-3-methyl-2-cyclopenten-1-one	4.51	4.53	3.59	-	-	4.48	5.16
52	3-Methyl-1,2-cyclopentanedione	-	-	-	3.37	4.99	-	-
53	1-Methyl-2-piperidinone	0.70	-	-	-	-	-	-
54	2,5-Hexanedione	-	-	-	-	-	0.35	0.48

55	1-(Acetyloxy)- 2-propanone	-	-	0.58	1.28	2.08	-	1.61
56	2-Hydroxy-3-propyl-2-cyclopenten-1-one	-	0.38	-	0.62	0.69	-	-
57	4,4-Dimethyl-2-cyclohexen-1-one	0.41	-	-	-	-	-	-
58	3-Ethyl-2-hydroxy-2-cyclopenten-1-one	2.40	1.56	1.35	2.04	2.47	2.40	2.38
59	2,3-Dihydro-1H-Inden-1-one	-	0.48	-	-	-	-	-
60	1,2-Cyclopentanedione	3.76	2.81	1.38	0.98	-	-	-
61	5-Hydroxy-2-(hydroxymethyl)-4H-pyran-4-one	0.38	-	-	-	-	-	-
62	5-(1,2-Dihydroxyethyl)dihydrofuran-2-one	-	-	0.34	-	-	-	-
63	1,4,5,6,7,7a-Hexahydro-7a-methyl-2H-inden-2-one	-	-	-	-	0.85	-	-
64	1-(2-Hydroxy-5-methylphenyl)-ethanone	0.32	0.75	-	-	-	-	-
65	4-Hydroxy-2-methylacetophenone	-	-	0.34	-	-	-	-
66	4-Hydroxy-3-methylacetophenone	-	-	-	0.77	-	-	-
67	4-Hydroxy-2,4,5-trimethyl-2,5-cyclohexadien-1-one	-	-	-	1.31	1.04	0.60	-
68	2-Methyl-4-(1-methylethyl)-2-cyclohexenone	-	-	-	-	0.57	-	-
69	7-Methoxy-3-oxabicyclo[3.3.0]oct-7-en-2-one	-	-	1.41	-	-	-	-
70	2-Acetyl-4-methyl-1,3-cyclopentanedione	-	-	-	-	-	1.17	-
71	3-Methyl-1-phenyl-2-butanone	-	-	-	-	1.04	-	-
72	1-(2-Hydroxy-6-methoxyphenyl)-ethanone	-	-	-	0.53	-	-	-
73	3,4,4a,5,6,7-Hexahydro-4a-methyl-2H-1-benzopyran-2-one	-	-	-	0.70	-	-	-

74	Spiro[4.5]Decane-1,6-dione	-	-	-	0.53	-	-	-
75	1-(4-Hydroxy-3-methoxyphenyl)-ethanone	0.47	0.38	0.32	-	-	-	-
76	2',6'-Dihydroxy-3'-methylacetophenone	-	0.74	-	-	-	-	-
77	2-Hydroxy-3-methyl-6-(1-methylethyl)-2-cyclohexen-1-one	0.39	-	-	-	0.44	-	-
78	2-Hydroxy-4,4,6,6-tetramethyl-2-cyclohexen-1-one	-	0.78	-	-	-	-	-
79	1-(2,3,4-Trihydroxyphenyl)-ethanone	-	0.49	-	-	-	-	-
80	5-Hydroxy-2,7-dimethyl-4-octanone	-	-	0.31	-	-	-	-
81	1-(4-Hydroxy-3-methoxyphenyl)-2-propanone	-	-	0.92	1.21	1.55	-	0.79
82	3',5'-Dimethoxyacetophenone	0.50	0.49	0.47	-	-	-	-
83	1-(2,6-Dihydroxy-4-methoxyphenyl)-ethanone	-	-	0.93	-	-	-	-
84	2-(1,1-Dimethylethyl)-5-(1-methylethyl)-1,3-dioxolan-4-one	-	-	-	0.61	-	-	-
85	1-(4-Hydroxy-3,5-dimethoxyphenyl)-ethanone	1.29	0.94	0.69	1.11	-	-	-
86	5-Ethyl-5-(2-propenyl)-2,4,6(1H,3H,5H)-pyrimidinetrione	-	-	-	-	1.46	-	-
87	3-(2-Hydroxy-ethyl)-1-methyl-3,7-dihydro-purine-2,6-dione	-	-	-	-	0.51	-	-
88	1-(4-Isopropoxy-3-methoxyphenyl)-propan-2-one	1.37	1.19	-	-	-	0.63	-
89	2,3,9-Trimethoxy-dibenz[d,f]cycloheptanone	-	-	-	-	-	0.44	-
	Aldehydes	9.37	5.01	1.47	2.63	0.61	0.00	0.00
90	Furfural	5.34	3.61	-	-	-	-	-

91	2-Ethyl-butanal	-	-	-	1.60	-	-	-
92	5-Methyl-2-furancarboxaldehyde,	2.40	-	-	-	-	-	-
96	Heptanal	-	-	-	0.60	-	-	-
94	2-Oxo-3-cyclopentene-1-acetaldehyde	-	-	1.47	-	-	-	-
93	5-(Hydroxymethyl)-2-furancarboxaldehyde	1.04	0.92	-	-	-	-	-
95	4-Hydroxy-3,5-dimethoxy-Benzaldehyde	0.59	0.48	-	0.43	-	-	-
97	3,4,5-Trimethoxy-benzaldehyde	-	-	-	-	0.61	-	-
	<i>Alcohol</i>	5.50	5.50	8.22	4.77	3.59	6.23	6.30
98	3-Furanmethanol	4.95	4.09	-	-	-	2.69	3.36
99	Tetrahydro-2-furanmethanol	0.55	0.42	4.30	1.89	3,18	2.27	2.94
100	Glycolaldehyde dimethyl acetal	-	0.43	-	-	-	-	-
101	2,3-Dihydro-1H-indene-1,2-diol	-	-	0.38	-	-	-	-
102	1,2-Cyclohexanediol	-	-	3.21	-	-	-	-
103	2,4-Dimethyl-4-octanol	-	-	0.33	-	-	-	-
104	1-(Nitromethyl)-cyclohexanol	-	-	-	0.40	-	-	-
105	Alpha-methyl-alpha-benzenemethanol	-	-	-	-	0.41	-	-
106	4-(Butylnitrosoamino)-1-butanol	-	0.66	-	-	-	-	-
107	2,3-Dihydro-2,2-dimethyl-3,7-benzofurandiol	-	-	-	0.31	-	-	-
108	4-Oxo-.beta.-isodamascol	-	-	-	1.25	-	-	-
109	Exo-norbornanol,methyl(pentamethylene)silyl ether	-	-	-	0.51	-	-	-

110	1,4:3,6-Dianhydro-,diacetateD-glucitol	-	-	-	-	-	1.27	-
111	2,3-Dihydro-2-(4-hydroxy-3-methoxyphenyl)-5-(3-hydroxy-1-propenyl)-7-methoxy-3-benzofuranmethanol	-	0.32	-	-0.41	-	-	-
	<i>Esters</i>	6.10	4.75	4.54	4.57	4.97	2.66	1.71
112	Butyrolactone	-	-	-	0.74	0.98	-	-
113	Propanoic acid, ethenyl ester	0.88	0.79	0.58	-	-	-	0.31
114	Methyl 2-furoate	0.33	-	-	-	-	-	-
115	Butanoic acid, 2-propenyl ester	0.86	-	-	0.41	-	-	-
116	4-Oxo-pentanoic acid,methyl ester	0.38	0.45	0.41	-	-	-	-
117	Cyclopentanecarboxylic acid, ethenyl ester	-	-	-	0.34	-	-	-
118	3-Ethyl-2-pentenoic acid,methyl ester	0.41	-	-	0.43	-	0.48	-
119	(E)-2-Heptenoic acid, methyl ester	-	-	0.71	-	-	-	-
120	2-Propenoic acid, 2-methyl-, oxiranylmethyl ester	-	-	-	-	0.40	-	-
121	Methyl 3-isothiocyanatopropionate	0.48	-	-	-	-	-	-
122	1,2-Ethandiol, diacetate	1.42	1.07	-	-	-	1.50	-
123	2-Methylene-octanoic acid, methyl ester	-	0.63	-	-	-	-	-
124	Acetic acid, 4-Isopropylidencyclohexyl ester	-	-	-	-	-	-	0.51
125	Heptanoic acid, 3,6,6-trimethyl-, methyl ester	-	-	-	-	-	-	0.89
126	4-Hexenoic acid, 2-Acetyl-2,3-dimethyl-, ethyl ester, (E)- (stereoisomer 2)	-	-	-	0.69	-	-	-
127	Diethyl Phthalate	-	-	-	0.50	3.59	-	-

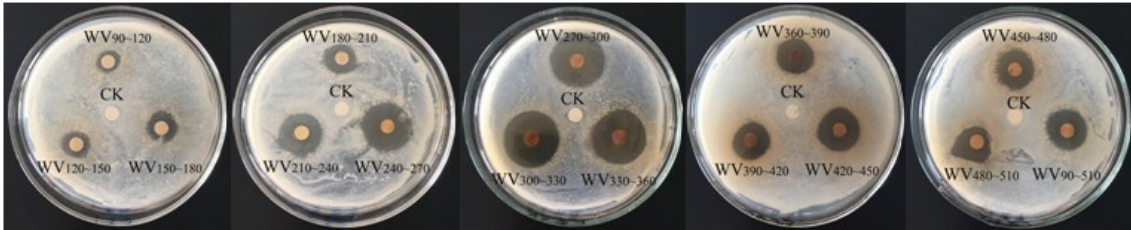
128	Methyl(3,4-dimethoxyphenyl)(hydroxy)acetate	1.34	0.90	1.34	1.23	-	-	-
129	(Z,Z)3,4-Diethyl-2,4-hexadienedioic acid,dimethyl ester	-	-	-	-	-	0.32	-
130	Butyric acid, 3-tetradecyl ester	-	-	1.50	-	-	-	-
131	Sulfurous acid, decyl 2-methyl-4-methoxybutyl ester	-	0.34	-	-	-	-	-
132	2,4-Dimethyl-Heneicosanoic acid, methyl ester	-	-	-	-	-	0.36	-
133	l-Valine, Nallyloxycarbonyl, hexadecyl ester	-	0.57	-	-	-	-	-

27

28 **List of figures**

29

Enterobacter aerogenes



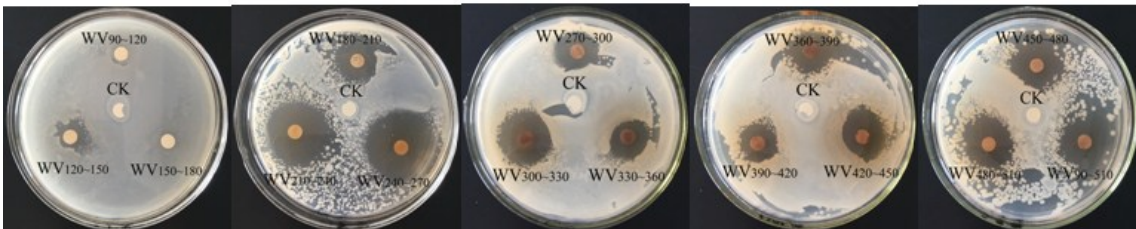
30

Bacillus subtilis



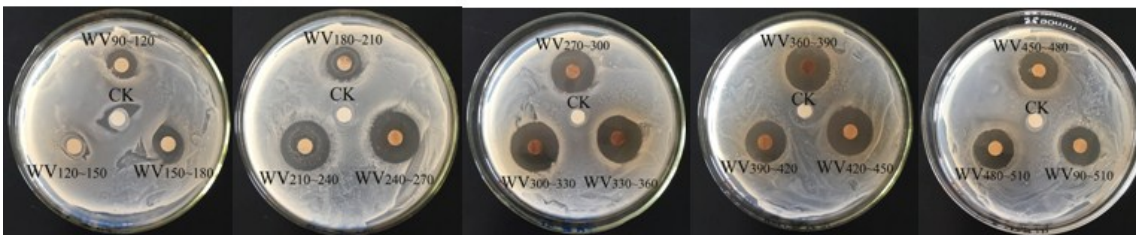
31

Staphylococcus aureus



32

Bacillus subtilis



33

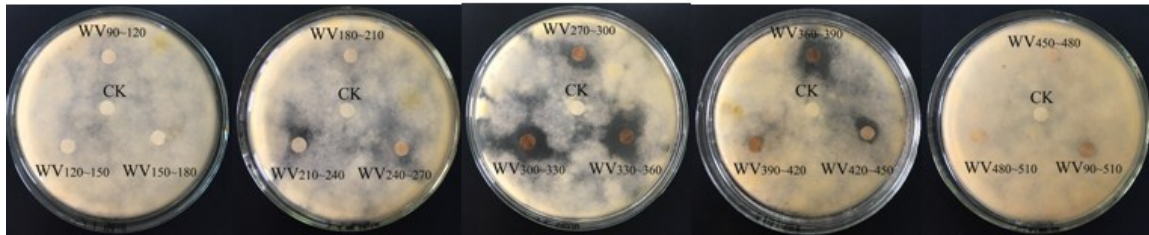
34 **Fig.S1. Antibacterial activities of wood vinegars of *Eucommia Ulmoides* Olivers**

35

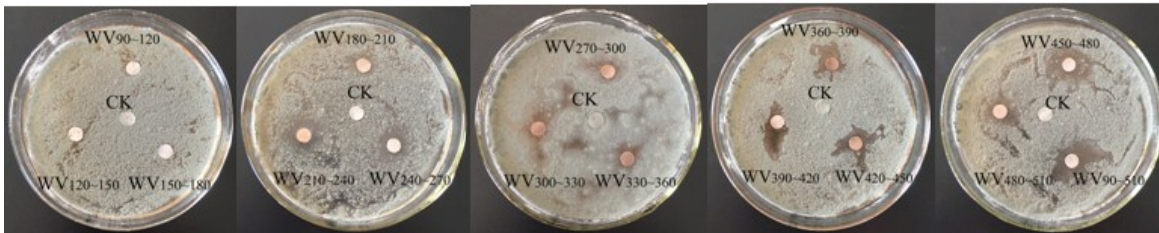
branches collected at different temperature ranges.

36

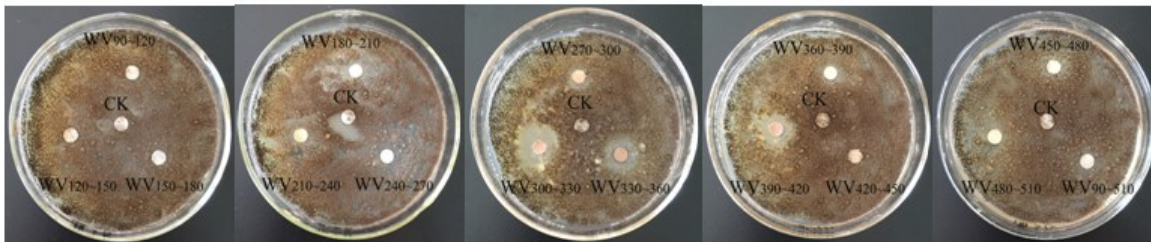
Penicillium



Rhizopus



Aspergillus



37

38 **Fig.S2. Anti-fungus activities of wood vinegars of *Eucommia Ulmoides* Olivers**
39 **branches collected at different temperature ranges.**

40

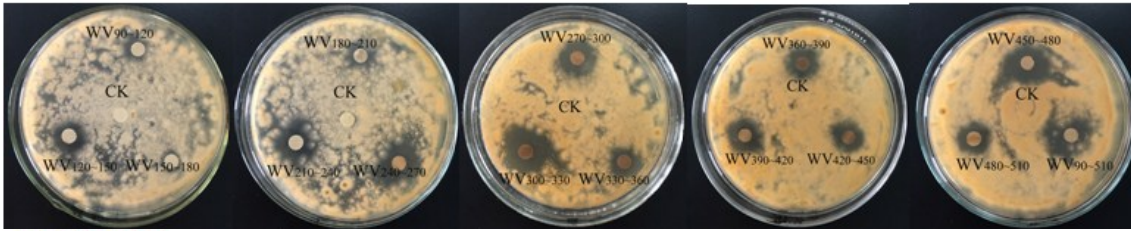
41

42

43

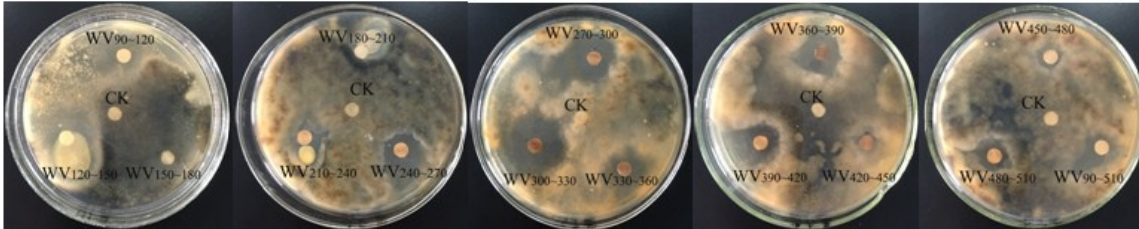
44

Buckwheat leaf spot



45

Wheat root rot



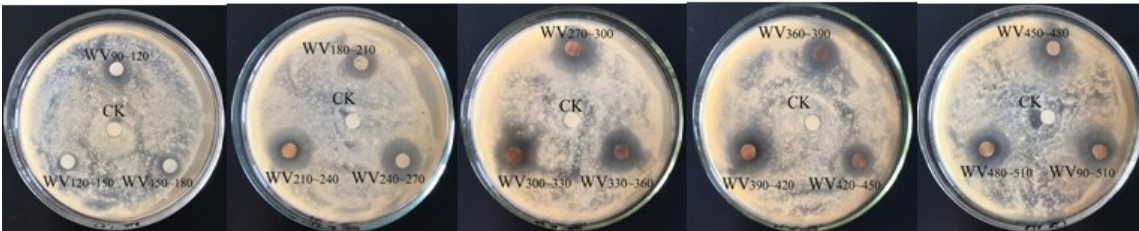
46

Eggplant wilt



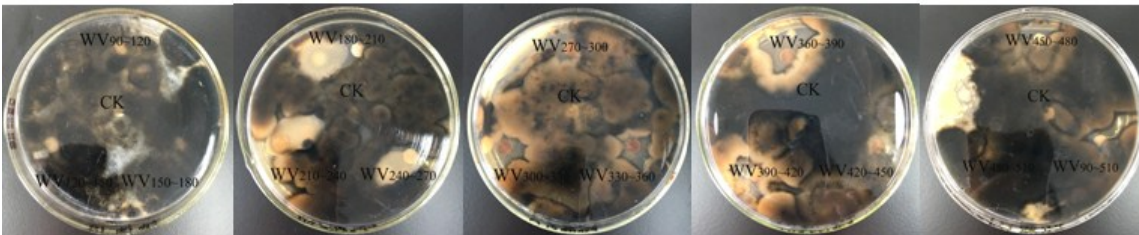
47

Watermelon wilt



48

Root rot



49

50 **Fig.S3. Anti-plant pathogens activities of wood vinegars of *Eucommia Ulmoides***

51 ***Olivers* branches collected at different temperature ranges.**