

Relationship Between the Microbiome and Indoor Temperature/Humidity in a Traditional Japanese House with a Thatched Roof in Kyoto, Japan

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Supplemental Table S1. Monthly average (a) temperature (°C) and (b) relative humidity (%) of the subject house from April, 2018 to September, 2020. Since the difference of physical environment was evaluated by the monthly mean value, we conducted a paired t-test for the monthly average data for each location (April 2018 - March 2019 data and April 2019 - March 2020 data were tested). There were no significant differences between the conditions.

(a)

		outdoor air	earth floor space	space under the ceiling	Storage	dining room	Japanese-style room
2018	April	15.0	15.1	16.5	17.8	20.6	20.0
	May	17.4	17.7	19.1	20.1	21.7	21.2
	June	21.1	21.4	22.4	23.0	23.8	23.6
	July	27.3	27.3	28.3	28.7	28.5	28.5
	August	26.8	27.1	27.9	28.3	27.8	27.8
	September	21.6	22.1	22.8	23.4	23.9	24.2
	October	15.9	16.6	17.2	18.3	19.1	19.0
	November	11.1	12.1	13.4	15.0	17.4	17.6
	December	6.1	8.2	11.4	14.1	19.9	23.3
2019	January	2.8	4.9	8.9	11.6	17.3	21.4
	February	4.4	6.2	9.5	12.4	18.3	21.5
	March	7.1	8.6	11.4	14.2	19.4	20.7
	April	11.2	12.2	14.3	16.4	20.1	20.3
	May	17.1	18.0	19.5	20.4	21.1	20.9
	June	20.6	21.3	22.6	23.3	23.4	23.0
	July	24.0	24.4	25.5	26.0	25.9	25.7
	August	26.6	27.3	28.5	28.8	28.1	28.0
	September	23.0	23.9	24.8	25.2	24.9	24.6
	October	17.1	18.4	19.2	19.9	20.8	20.4
	November	9.6	11.6	13.1	15.2	18.5	17.4
	December	5.6	7.7	9.7	13.1	17.9	16.7
2020	January	5.1	6.6	8.2	11.1	15.3	14.1
	February	4.0	6.1	10.0	14.0	21.2	21.2
	March	7.7	9.5	12.5	16.2	21.7	21.2
	April	9.6	12.7	15.1	18.0	22.6	20.6
	May	17.2	18.5	19.9	21.1	22.2	—
	June	21.7	22.5	23.8	23.7	24.5	—
	July	23.4	24.4	25.2	—	25.5	—
	August	27.0	27.7	28.9	—	28.7	—
	September	27.0	27.8	28.7	—	28.6	—
t-test		t(11)=0.805 p=0.438	t(11)=0.055 p=0.957	t(11)=0.169 p=0.869	t(11)=-0.542 p=0.598	t(11)=-0.196 p=0.848	t(11)=1.559 p=0.147

(b)

		outdoor air	earth floor space	space under the ceiling	Storage	dining room	Japanese-style room
2018	April	66.4	66.2	59.6	63.2	52.8	53.8
	May	73.9	71.8	64.4	66.0	60.0	61.6
	June	81.5	79.5	73.0	73.7	69.6	70.6
	July	77.7	77.3	71.2	70.9	71.2	71.4
	August	77.6	76.0	71.1	69.8	71.7	72.2
	September	89.5	85.8	80.8	78.8	76.3	74.6
	October	85.8	82.0	76.2	76.8	73.8	74.3
	November	88.9	82.9	76.6	79.6	68.2	67.6
	December	91.1	80.5	67.2	68.3	47.7	39.8
2019	January	91.6	80.8	63.8	61.2	42.6	34.2
	February	87.4	77.5	63.2	60.4	41.9	35.7
	March	81.8	73.8	62.7	62.0	45.1	42.7
	April	74.7	68.9	60.3	61.1	48.8	49.1
	May	67.8	64.1	57.4	60.3	54.2	57.4
	June	81.1	78.0	70.6	69.0	70.0	70.4
	July	89.4	86.5	79.6	79.0	79.0	80.5
	August	82.9	79.9	72.9	72.1	74.9	76.1
	September	85.4	81.0	74.7	74.4	76.0	77.5
	October	90.6	84.3	79.2	80.3	76.6	78.6
	November	87.3	78.9	72.5	73.5	60.8	65.3
	December	92.6	82.6	74.0	71.4	54.7	58.7
2020	January	89.0	82.1	73.6	70.2	54.4	58.2
	February	88.3	78.7	63.4	62.5	41.6	42.5
	March	79.9	72.1	60.5	59.4	43.5	45.3
	April	77.0	65.6	57.5	57.7	44.8	46.7
	May	78.1	72.0	63.7	66.6	61.5	—
	June	83.4	78.5	68.0	68.0	70.5	—
	July	92.3	85.9	75.3	—	80.7	—
	August	83.0	79.6	71.0	—	73.6	—
	September	82.0	78.1	70.9	—	73.0	—
t-test		t(11)=−0.864 p=0.406	t(11)=−0.192 p=0.851	t(11)=−0.467 p=0.649	t(11)=−0.138 p=0.893	t(11)=−0.687 p=0.506	t(11)=−2.01 p=0.069

Supplemental Table S2. Number of 18S rRNA sequence reads.

Sample	Sampling location	input	trimmomatic filter	dada2 filtered	nonchim	no.singleton	Goods coverage [%]
MK-Cd-18S	dining room air	1,405,058	1,283,374	45,000	44,682	3	99.7
MK-Co-18S	outdoor air	82,894	73,612	2,618	2,569	0	100.0
MK-Cw-18S	Japanese-style room air	313,690	286,834	9,749	9,570	3	99.7
MK-S2-18S	storage wall surface	1,401,041	1,262,000	45,378	42,311	3	99.7
MK-Sc-18S	storage column surface	205,094	186,222	8,638	8,531	2	99.8
MK-Sd-18S	dining room wall surface	775,433	702,265	46,221	45,758	6	99.5
MK-Sow1-18S	South side exterior wall surface	150,602	137,553	9,871	9,207	1	99.9
MK-Sow2-18S	West side exterior wall surface	979,409	889,318	53,588	52,109	2	99.8
MK-Sr-18S	earth floor roof surface	205,206	183,615	11,500	11,392	1	99.9
MK-T_A-18S	thatch west under the eaves	162,190	146,094	13,813	13,756	1	99.9
MK-T_B-18S	thatch west surface	940,854	857,489	36,584	36,119	1	99.9
MK-T_C-18S	thatch west inner	57,465	50,964	9,799	9,644	2	99.8
MK-T_D-18S	thatch south under the eaves	27,537	25,003	1,448	1,423	0	100.0
MK-T_F-18S	thatch south inner	19,534	16,982	1,467	1,410	0	100.0
MK-Ww1-18S	well water 1	126,596	114,904	13,021	12,468	1	99.9
MK-Ww2-18S	well water 2	19,519	17,528	3,905	3,691	1	99.9

Supplemental Table S3. Number of 16S rRNA sequence reads.

Sample	Sampling location	input	Trimmomatic filter	dada2 filtered	nonchim	Mito,Chloro elimi	no. singleton	Goods coverage [%]
MK-Co-16S	outdoor air	369,852	254,066	84,725	57,731	2,608	0	100
MK-Sb-16S	bathroom wall surface	65,826	62,558	8,321	7,706	2,971	0	100
MK-Sd-16S	dining room wall surface	254,306	29,339	9,284	7,370	1,033	0	100
MK-Sf-16S	earth floor surface	255,595	240,160	28,143	24,799	23,607	0	100
MK-Sow1-16S	South side exterior wall surface	564,192	388,774	60,653	48,917	48,149	0	100
MK-Sr-16S	earth floor roof surface	93,804	22,320	3,911	3,286	1,450	0	100
MK-T_A-16S	thatch west under the eaves	101,813	42,857	8,396	7,735	1,423	0	100
MK-T_B-16S	thatch west surface	225,529	191,733	28,865	23,465	10,440	0	100
MK-T_C-16S	thatch west inner	385,142	36,547	9,226	6,609	1,162	0	100

MK-T_D-16S	thatch south under the eaves	155,249	102,678	8,543	8,008	4,250	0	100
MK-T_E-16S	thatch south surface	246,410	208,447	23,073	17,552	12,324	0	100
MK-T_F-16S	thatch south inner	274,340	105,522	6,199	5,353	4,559	0	100
MK-Ww1- 16S	well water 1	158,498	118,727	8,630	7,233	7,195	0	100



Supplemental Figure S1. Pulling out the thatch (a) and thatch (b). The colour and strength of the thatch are different depending on from where it was pulled out.