

## Effects of relative humidity on health and wellbeing of laboratory animals

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In the below table scientific papers on the effect of relative humidity in studies performed in mice, rats and guinea pigs are listed. These effects can have consequences for the health and welfare of the animal and could potentially affect the reproducibility of research within these research areas.

**Table: Effect of relative humidity on mice and rats**

RH (%)	Relevance	+/-	Reference
<10	Decreased protective properties of the skin	-	[1]
<10	Decreased protective properties of the layers in the lungs	-	[2]
10	Increased epidermal IL-1 $\alpha$ (mRNA and protein levels)	-	[3]
10	Stimulation of epidermal DNA synthesis + amplification of hyperproliferative response to barrier disruption	-	[4]
10-20	Decreased defense against virus infection, decreased tissue repair, inflicts caspase-dependent disease pathology	-	[5]
12-18	Ocular irritation when combined with increased airflow	-	[6]
15-30	Delayed puberty in female mice	-	[7]
20-35	Favorable condition for spread of influenza virus in guinea pigs	-	[8]
20-40	Maximal stability of some virus e.g. influenza	-	[9]
<30	Initiation of ringtail in the pouched mouse and laboratory mice	-	[10]
			[11]
35	Increased food intake	+/-	[12]
<40	Increased incidence of ringtail in rats	-	[13]
			[14]
<45	Increased eye disease probability	-	[15]

45-55	Reduction of ammonia in cages	+	[16]
50	Reduced transmission of influenza virus in guinea pigs	+	[9]
50	Reduced survival and viability of airborne bacteria	+	[17]
60-70	Increased transmission of Sendai virus in mice	-	[18]
60-80	Increased transmission of influenza virus in guinea pigs	-	[9]
65-75	Ammonia build-up in mouse cages	-	[16]
71-82	Reduction in rodent and rabbit airborne allergens	+	[19]
74	Increase in airway resistance in rats	-	[20]
75	First estrus attained earlier	-	[7]
>85	Increased tendency for allergy when irritation of airways is induced in murine model	-	[2]
>85	Changed elastance of airways in rats		[21]
100	Increased wound healing	+	[22]

+ refers to positive effects on animals, - refers to negative effects on animals.

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