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THE SYSTOLIC AND DIASTOLIC BLOOD PRESSURE VALUES IN FEMALE RABBITS WITH METABOLIC SYNDROME

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Abstract

Objective: This study investigates the systolic and diastolic blood pressure (BP) values in female rabbits with a metabolic syndrome (MS) model. Metabolic syndrome, characterized by a cluster of conditions including hypertension, is a significant risk factor for cardiovascular diseases. Understanding BP changes in an MS model can provide insights into the pathophysiology of hypertension associated with metabolic syndrome. Methods: Female rabbits were induced with metabolic syndrome through a high-fat, high-sucrose diet over a period of 12 weeks. A control group was maintained on a standard diet. Systolic and diastolic BP measurements were taken at baseline and at regular intervals using a non-invasive tail-cuff method. BP values were compared between the control and MS groups, and statistical analysis was performed to assess the significance of observed differences. Results: The MS group exhibited a significant increase in both systolic and diastolic BP values compared to the control group. By the end of the study period, the mean systolic BP in the MS group was notably higher, indicative of sustained hypertension. Similarly, the diastolic BP values were elevated, reflecting increased vascular resistance and potential endothelial dysfunction. These changes were consistent with the development of other metabolic syndrome features such as insulin resistance, hyperlipidemia, and obesity. Conclusion: Female rabbits with an induced metabolic syndrome model showed significant elevations in systolic and diastolic blood pressure, highlighting the hypertensive component of metabolic syndrome. These findings underscore the importance of managing BP in individuals with metabolic syndrome to reduce the risk of cardiovascular complications. Further research is warranted to explore the underlying mechanisms and potential therapeutic interventions to mitigate hypertension in metabolic syndrome.

Keywords: Systolic blood pressure, diastolic blood pressure, metabolic syndrome, female rabbits, hypertension, cardiovascular risk.

The results of the experimental study showed that the resting heart rate and arterial pressure were examined in male and female rabbits with metabolic syndrome modeled in the experiment. It was found that the heart rate and arterial pressure increased in rabbits with increased body weight. An increase in systolic and diastolic pressure contributed to an increase in mean pressure.

Table 1 Systolic and diastolic blood pressure parameters in male rabbits modeled with metabolic syndrome

№	Day 1		Day 8		Day 15		Day 22		Day 29		Day 36		Day 42		Day 49		Day 56	
	SP	DP	SP	DP	SP	DP	SP	DP	SP	DP	SP	DP	SP	DP	SP	DP	SP	DP
1	98	48	116	54	127	57	134	59	140	60	145	62	151	64	156	68	154	70
2	97	49	124	51	129	54	136	56	141	58	144	60	146	59	146	63	149	64
3	94	45	126	50	134	52	137	54	143	59	147	63	150	64	153	66	155	68
4	92	50	131	52	135	56	139	58	144	61	149	63	152	65	156	70	154	67
5	96	47	127	49	132	57	137	56	142	60	148	65	154	66	159	71	157	69
6	93	49	129	51	131	55	135	57	143	58	147	64	155	68	158	65	156	65

As can be seen from Table 1, the normal blood pressure of male rabbits is on average 98/48, respectively. The increase in symptoms of metabolic syndrome was observed with changes in blood pressure, that is, with the greatest increase in blood pressure in the last days of the experiment.

Table 2 Systolic and diastolic blood pressure parameters in female rabbits modeled with metabolic syndrome

№	Day 1		Day 8		Day 15		Day 22		Day 29		Day 36		Day 42		Day 49		Day 56	
	SP	DP	SP	DP	SP	DP	SP	DP	SP	DP	SP	DP	SP	DP	SP	DP	SP	DP
1	98	32	107	37	116	41	124	43	131	45	138	49	145	57	149	61	151	62
2	92	36	109	41	119	43	126	47	129	46	136	47	143	55	147	59	152	59
3	93	43	108	39	117	42	124	44	134	45	140	50	146	59	143	57	149	60
4	89	35	105	37	115	41	124	46	135	47	139	51	145	56	149	55	150	59
5	88	39	106	39	117	43	128	47	132	48	137	53	144	55	151	58	152	61
6	90	46	107	40	118	45	125	45	134	46	138	50	142	51	148	56	149	57

The average blood pressure of female rabbits is 92/38 in Table 2, respectively. An increase in symptoms of metabolic syndrome was observed with an increase in blood pressure. The results of the study showed that body weight increase and hypertension are independently associated with changes in general and regional blood flow.

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