LAVENDER'S PRATICAL REPORT of ELASTICITY OF VEIN AND ARTERY

Research topic: the elasticity of cow's vein and aorta hanged with different masses.

Hypothesis: the vein and aorta are to main blood vessels in our hearts which are very elastic. Depends on the function of each vessel, they are placed under different pressure. Through the arteries, blood is pumped to the body, while in through the vein, blood comes back to the heart. Hence, the elasticity of them is differentiated. Pumping blood to the whole body means higher pressure so that artery have thicker walls and more elastic than veins. In this experiment, I will examine the elasticity of these blood vessels.

Materials and apparatus:

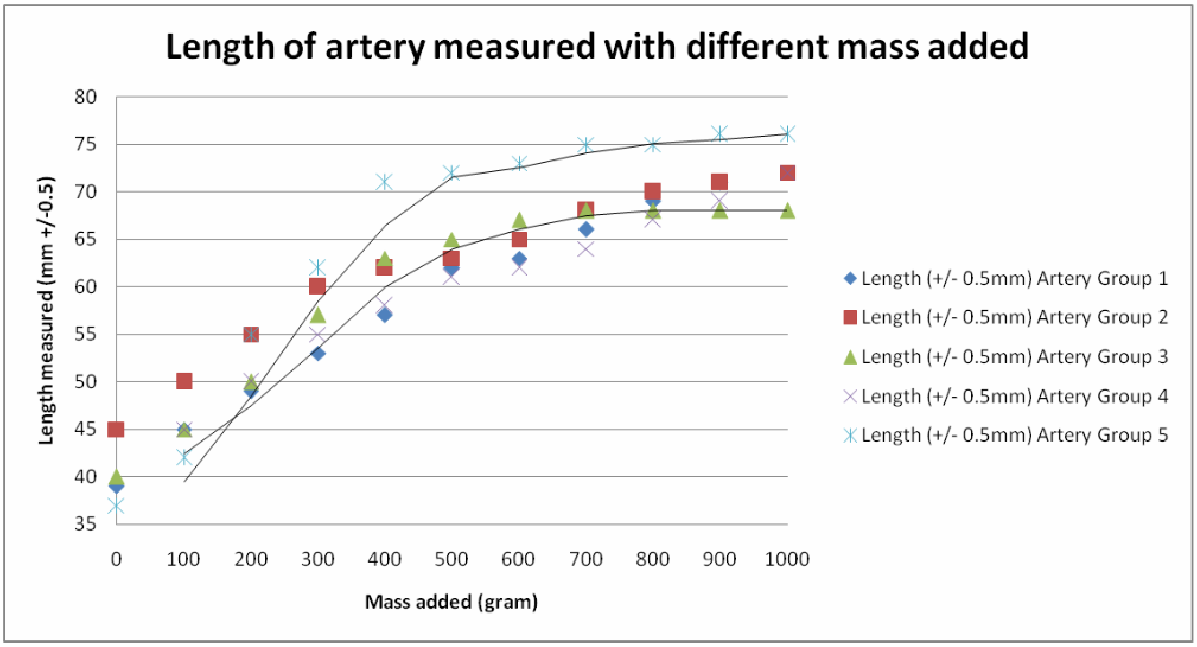
- Cow's vein
- Cow's aorta
- 1 Stand and clamp
- 1 Paper clips
- 1 Ruler (+/-0.5mm)
- 10 Weights of 100 grams each

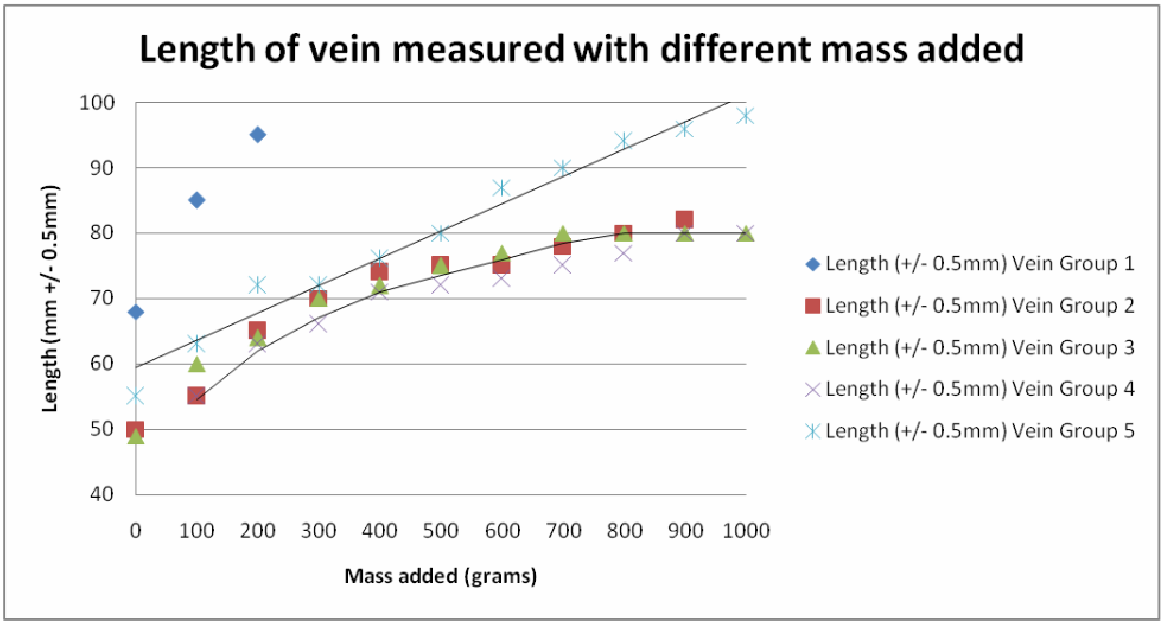
Method:

1. Cut out a ring of 3mm from the aorta and another from vena cava
2. Use the clip to hang the aorta ring on the stand
3. Measure the length of the aorta ring
4. Add a weight of 100 grams to the aorta ring
5. Measure the length of the aorta ring
6. Repeat step 4 and 5 for 9 times (the maximum mass added is 1000 grams)
7. Repeat all the steps with vena cava
8. Record the result.

Raw data collecting

Mass placed on atery/vein (g)	Length (+/-0.5mm)									
	Artery					Vein				
	Group 1	Group 2	Group 3	Group 4	Group 5	Group 1	Group 2	Group 3	Group 4	Group 5
0	39	45	40	29	37	68	50	49	36	55
100	45	50	45	45	42	85	55	60	55	63
200	49	55	50	50	55	95	65	64	63	72
300	53	60	57	55	62		70	70	66	72
400	57	62	63	58	71		74	72	71	76
500	62	63	65	61	72		75	75	72	80
600	63	65	67	62	73		75	77	73	87
700	66	68	68	64	75		78	80	75	90
800	69	70	68	67	75		80	80	77	94
900	71	71	68	69	76		82	80	80	96
1000	72	72	68	72	76			80	80	98



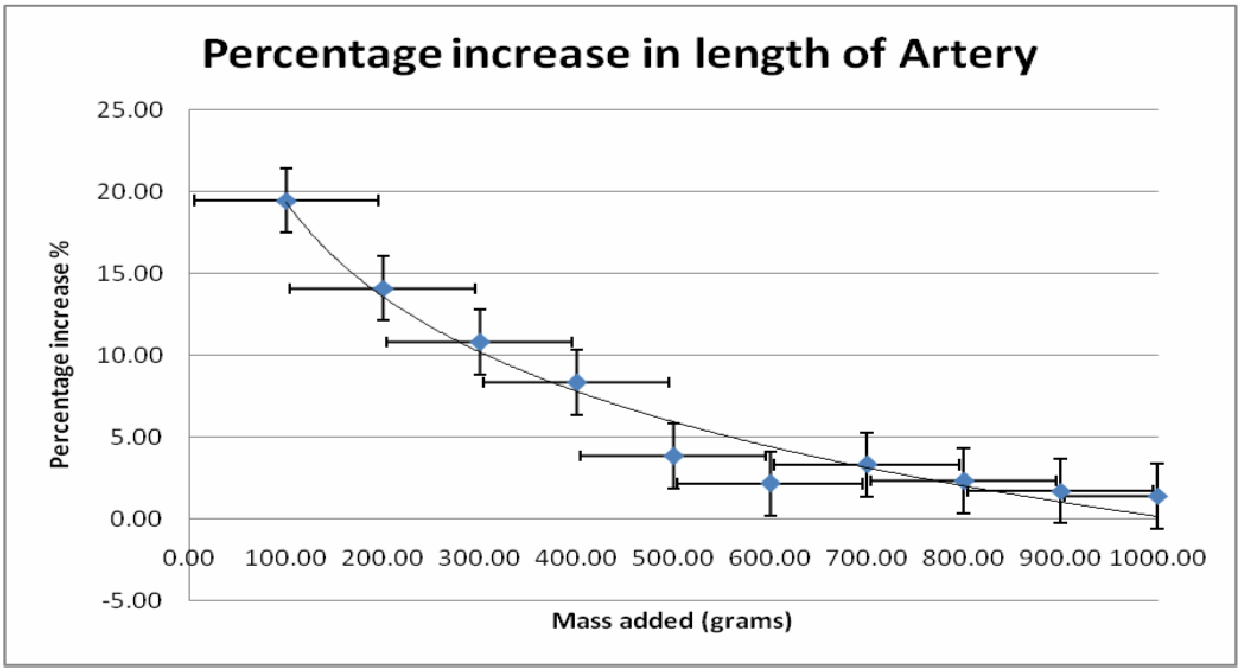


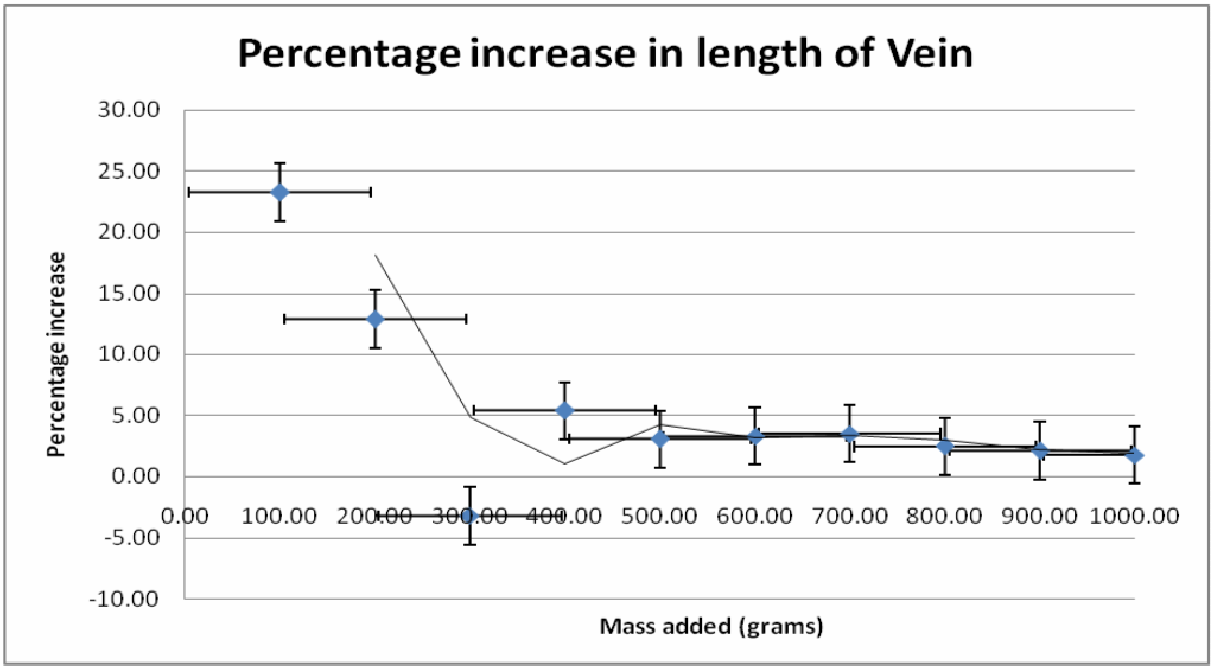
Data processing:

The length of both vein and artery was increasing very clearly at the beginning duo to the increase of mass added. This is because the blood vessels has reached its limitation and hence has stopped increasing and started leveling off. Although there are some strange signs with length of group 1 and group 5, the trend was still increasing at the beginning and kept constant at the end.

Mass placed on atery/vein (g)	Mean length(mm)		Standard Deviation	
	Artery	Vein	Artery	Vein
0.00	38.00	51.60	5.83	11.55
100.00	45.40	63.60	2.88	12.44
200.00	51.80	71.80	2.95	13.44
300.00	57.40	69.50	3.65	2.52
400.00	62.20	73.25	5.54	2.22
500.00	64.60	75.50	4.39	3.32
600.00	66.00	78.00	4.36	6.22
700.00	68.20	80.75	4.15	6.50
800.00	69.80	82.75	3.11	7.63
900.00	71.00	84.50	3.08	7.72
1000.00	72.00	86.00	2.83	10.39

mass	% increase in length	
	Vein	Artery
100.00	23.26	19.47
200.00	12.89	14.10
300.00	-3.20	10.81
400.00	5.40	8.36
500.00	3.07	3.86
600.00	3.31	2.17
700.00	3.53	3.33
800.00	2.48	2.35
900.00	2.11	1.72
1000.00	1.78	1.41





Quanlitative data:

As we can see, the percentage increase in length of both vein and artery is increasing at the beginning but keep constant at the end. This is because the blood vessels have reached their limitations.

Compare the two length increase in vein and artery, we can see that the artery increase in length less than the vein. The reason for this is the artery have thicker walls and harder in order to complete its mission as the carrier of blood to the whole body.