Hirudotherapy: The Study of Blood Components in Hirudo medicinalis Bloodletting

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Hirudo medicinalis, a medicinal leech species, were used by the Ancient Egyptians for bloodletting and are now approved by the FDA for their use in reconstructive surgeries and finger reattachment. Hirudotherapy, or leech therapy, is also believed to be a treatment option for several diseases including arthritis, endometriosis, vascular diseases, and more. Deeper research on this topic can lead to the popularization of hirudotherapy. This experiment tests a factor of leech therapy that has not yet been explored. To which component of blood are leeches most attracted: blood plasma or formed elements? Leeches store their food up to several times their body weight. The hypothesis of this experiment proposes that medicinal leeches fed with whole bovine blood, medicinal leeches fed with blood plasma, and medicinal leeches fed with resuspended formed elements will have significantly different percent increases in mass after they have fed on the different blood components. This will compare their attraction to each of the components. I simulated a human host by allowing leeches to attach to preserved pig intestine and feed on 38°C blood components within. There is a noticeable correlation between the variables tested and the average percent increase in mass of the leeches that fed on them. The average percent increase in mass of leeches fed with whole bovine blood was 527%. Leeches fed with plasma increased with an average of 368%, and leeches that fed on resuspended formed elements increased by 63%. The group fed with whole blood and the group fed with resuspended formed elements are significantly different.

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