Vitamin's A, B-12, & E's Effects on Planaria Regeneration

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General Information

- Regeneration
- Why regeneration is important
- How diet affects regeneration
- What can negatively affect regeneration

What is Regeneration?

- Regeneration is renewing, or restoring lost or destroyed parts.

Who or what can do regeneration?

- Many invertebrates and some vertebrates can regenerate tissue, limbs, and/or organs.

Planarian (Platyhelminthes)

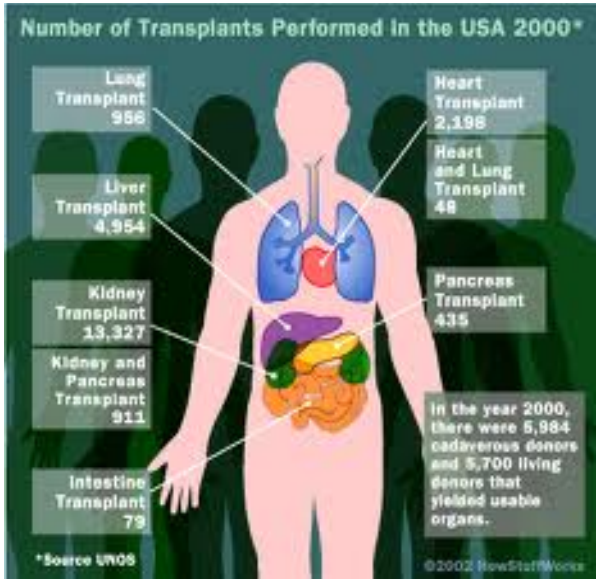
- Planarians are bilaterally symmetric metazoans of the phylum Platyhelminthes.

Why is it important?

- Some organisms cannot survive without their limbs.

What happens when regeneration cannot take place?

- The human body cannot always regenerate a specific organ needed to stay alive, so when that happens, it requires an organ transplant.



How does diet affects regeneration?

- The human body needs certain vitamins, minerals and nutrients to maintain health.

Some important nutrients.

- “Helpful nutrients” refers to sunlight, air, water, vitamins, minerals, sugars, starches, fats, oils, amino acids, digestive enzymes and various other nutrients.

Some vitamins needed to maintain health

- Vitamin A
- Vitamin B-12
- Vitamin E

Essential minerals.

- These minerals included: calcium, copper, iron, magnesium, phosphorus, potassium, selenium, sodium, and zinc.

What can negatively affect regeneration?

- Lethality (death) of the cells, in this case the planaria.
- Too extensive of an injury.

Objective

- I wanted to learn more about regeneration, I predict that certain vitamins, that humans need to maintain health, would help with regeneration in planaria.

Methods

- I divided 96 Planaria, into 4 groups, with their heads cut off behind their eyes. The planaria, were then placed into 24 well plates with 1ml artificial pond water to each well, with a dilution of three (3) different vitamins.

- There, the planarian regeneration progress was monitored daily under a magnifying glass/or dissecting microscope.

- Group -1, I used a 1; 100,000 dilution of vitamin A, with artificial pond water.
- Group -2, I used a 1; 100,000 dilution of vitamin B, with the artificial pond water.
- Group -3, I used a 1; 100,000 dilution of vitamin E, with artificial pond water.

- The dilutions were adjusted according to toxicity .

  Group -4 &5 I used as control groups, no vitamins

  just the artificial pond water.

Conclusion

Does anyone have any questions?

Finally, at this time, I would like to thank you for the time you have given me today and I hope you have a great day.

References

- Diehl, A. M. (2002). Liver Regeneration. *Frontiers in Bioscience 7* , 301-314.
- Franklin, A. (2009). *Regenerating Rivals.* Retrieved September 15, 2011, from http://oas.uco.edu/09/paper/Franklin,Ashleigh.pdf: http:oas,uco.edu
- French, M. F. (2010). Dietary reference values of individual micronutrients and nutriomes for genome damage prevention. *American Society for Nutrition , 91* (5), 1438s-1454s.
- Joseph, G., & Kellogg, J. (2009). North Dakota Medicinal Plants. In G. Joseph, & J. Kellogg, *North Dakota Medicinal Plants Screen-to-Nature Manual* (pp. 22-24). New Jersey: GLOBAL INSTITUTE FOR BIOEXPLORATION.

References

- Sant-Rayn Pasricha, A. S.-A. (2001). Vitamin B-12, folate, iron, and vitamin A concentrations in rural Indian children are associated with continued breastfeeding, complementary diet, and maternal nutrition. *American Society for Nutrition* , 1358-1370.
- Weissman, I. (2000). Stem Cells. *Units of Development, Units of Regeneration, and Units in Evolution* , 157-169.
- Zaidi, S. K.-Q. (2005). Effects of Antioxidant Vitamins on Glutathione depletion and Lipid Peroxidation induced by Restraint Stress in the rat Liver. *Drugs in R&D , 6* (3), 157-165(9).