Analyzing the Implications of Endocrine Disruptors on the Ovulatory Function of Caenorhabditis elegans

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Polycystic Ovary Syndrome (PCOS) is an endocrine disorder characterized by hormonal imbalance due to excessive levels of androgens and affects approximately 10% of women. Caenorhabditis elegans was used to research the potential causes of PCOS due to its similar homology with the human genome and many molecular-level similarities. Glucose, casein, and Bisphenol A (BPA) were used to induce PCOS-like signs, such as infertility. The hypothesis stated that BPA would have the greatest impact on fertility rates, decreasing the number of eggs produced the most. NGM plates were seeded with LB Broth, E.coli OP50, and concentrations of the endocrine disruptors (obtained through serial dilutions). The C. elegans were then chunked onto those plates. After 7 days of growth, the C. elegans were placed in bleach to count their eggs, and a comprehensive data collection was performed. The data collected supported the hypothesis, since the worms exposed to Bisphenol A (BPA) + methanol produced the least eggs. Additionally, the correlation coefficient for Bisphenol A (BPA) and the control was -0.41129, the lowest of all groups. Between the groups, the p-value < 0.01. The control group had an average of 9.33 eggs per worm, glucose had 5.25, casein had 3.9, methanol (control) had 5, and BPA had 1.66. Future experimentation will include analyzing the transgenerational effect of the endocrine disruptors on fertility and conducting a qPCR test. Additionally, non-prescription alternatives for PCOS will be used after endocrine disruptor exposure to ameliorate the effects of the syndrome.

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