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## **Definitions**

- **Polyvinyl Chloride (PVC):** A type of plastic commonly used in various products.
- **Hepatic Hemangiosarcoma:** A rare cancer of the blood vessels in the liver.
- **Metabolomics:** The study of small molecules (metabolites) within cells, tissues, or organisms.
- **Biomarkers:** Biological molecules that indicate a disease or condition.

## **Key Findings**

- Workers exposed to high levels of vinyl chloride had changes in their blood metabolites.
- Specific metabolites were linked to liver cancer development.
- New potential biomarkers for early detection of liver cancer were identified.

## **Introduction**

This study examines the effects of vinyl chloride exposure on workers in a polyvinyl chloride (PVC) production plant. The research focuses on identifying changes in blood metabolites that could indicate the development of hepatic hemangiosarcoma, a rare liver cancer.

## **Main Content**

### **Background**

Vinyl chloride is a chemical used to make PVC. Long-term exposure to high levels of vinyl chloride can cause liver cancer. The study aims to find early signs of liver cancer by analyzing blood samples from exposed workers.

### **Methods**

Researchers collected blood samples from PVC workers who developed hepatic hemangiosarcoma and from those who did not. They analyzed the metabolites in the blood to find differences between the two groups.

### **Results**

#### **Metabolite Changes**

- **Increased Metabolites:** Taurocholate, bradykinin, and fibrin degradation products.

- **Decreased Metabolites:** Anti-inflammatory lipids and a gut-derived phenol.

#### **Affected Pathways**

- **Bile Acid Metabolism:** Changes in bile acids were significant in workers who developed liver cancer.
- **Inflammation and Oxidative Stress:** Increased markers of inflammation and oxidative stress were found in the blood.

#### **Conclusion**

The study identified specific metabolites and pathways that are altered in PVC workers exposed to vinyl chloride who developed liver cancer. These findings can help in the early detection and prevention of hepatic hemangiosarcoma. Monitoring these biomarkers in at-risk workers could improve health outcomes and guide future research on occupational safety.

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