

Polycyclic aromatic hydrocarbons (pahs)



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Quantitative risk assessment of Polycyclic Aromatic Hydrocarbons

Introduction Polycyclic aromatic hydrocarbons (PAHs) refer to a big group of organic compounds comprising two or more fused rings. Several PAHs have the characteristic of being toxic while a part exhibit carcinogenic activity. As a result, in order to ascertain this characteristic, quantitative risks assessments of PAHs have been carried out on animal models. Therefore studies have been carried out on laboratory animals such as rats, mice and rhesus monkey and analysis carried out in order to find out the effect of the chemicals and how this in effect can possibly affect humans.

Evaluations used for quantitative risk assessment of Polycyclic aromatic hydrocarbons have not kept pace with the modern analytical methods hence ability of detection is not assured. Therefore, despite the fact that it's possible to measure these compounds in seafood, there is no sufficient information on the level of toxicity of these compounds known, thus cannot be incorporated in human health risk assessment since there is uncertainty. On the other hand, larger variety of chemically replaced PAHs are naturally happening and may include health risks if human populaces are open to hazardous levels. Therefore as a result of this, future research efforts should aim at filling this toxicological gap, so that in this way, human health risk assessment of PAHs in food can be appropriately determined. This is necessary in the case of petroleum spills. (Simon, 2003)

Benzo[a]pyrene(BaP) has been tested in a range of species, among the animals being rats, rabbits, guinea pigs and rhesus monkey. The effect on the animals from this laboratory testing was that, tumours have been observed in all the laboratory experiments carried out on the small animals.

Thus the effect of BaP has been seen as carcinogenic, when administered by <https://assignbuster.com/polycyclic-aromatic-hydrocarbons-pahs-research-paper-samples-2/>

a variety of routes, including diet, inhalation and intravenous. The carcinogenicity of individual PAH and PAH- containing combinations in experimental animals has been done. This has been carried out with individual PAH in humans but with no virtual data existing. These have indicated increased incidences of cancer to human population exposed. This finding carried out indicating that a number of individual PAH are carcinogenic to experimental animals show potential carcinogenic to humans. (Overton, 2003)

Toxicological effect is another outcome which is as a resulted after the experiment on the animals. Severe haematological effects have been detected in animals after oral exposure to high doses of PAHs. In vitro experiments have demonstrated the cytotoxicity of BaP and numerous other PAHs to cells from lungs of experimental animals. Severe, enduring hyperplasia and other serious effects alike have been observed. Also, animal data on reproductive toxicity are scarce and only available on BaP. This thus affects reproductive performance of rats. In contrast, this kind of experiments cannot be carried on human beings thus results to the controversy. (Kane, 2003)

Conclusion

Quantitative risk assessment has challenges. Risk assessment of BaP is affected by the poor quality of datasets available. It becomes more complex when assessment of similar chemicals is required. The experiments have demonstrated that BaP causes tumors, thus bringing about cancer in humans. Thus risk posed to human beings cannot be accurately established by observations results from the animal models in the laboratory. In this effect, experiments carried out on the animals can have adverse effect on <https://assignbuster.com/polycyclic-aromatic-hydrocarbons-pahs-research-paper-samples-2/>

human beings such as immunotoxicity, genotoxicity and may possibly influence atherosclerosis (Berg, 2013).

Reference

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