NAPHTHALENE

CAS : 91-20-3
동의어 : Albocarbon; Naphthalin; Naphthene; Tar camphor
화학식 : $C_{10}H_8$
TLV-TWA, 10ppm(52mg/m^3) ;
TLV-STEL, 15ppm(79mg/m^3) : 피부

역. 연세대의대 김 치 년

생식/성장에 관한 연구

Naphthalene을 생쥐에게 300mg/kg/day로 경구 투여한 결과 대조군에 비해 한 배 새끼의 생존수가 줄어들었다[12]. 수컷 생쥐에게 90일간을 133mg/kg/day로 또는 267 mg/kg/day로 투여한 결과 고환에 영향을 미치는 현상은 나타나지 않았다[13]. 사람의 경우 naphthalene이 태반으로 전달된다는 연구 보고가 두 편 이상 있었다[14,15].

유전독성 연구

Naphthalene은 Salmonella typhimurium strains TA98, TA100, TA1535, TA1537[16,17], UTH 8414, 또는 UTH 8413[18]에서 돌연변이가 나타나지 않았다. 배양된 설치류 태반[19,20]이나 유방의 내분비 세포[21]에 관한 연구에서도 naphthalene의 돌연변이성을 증명하지 못하였다.

약물동력학/대사 연구

Naphthalene의 생물학적 변환 연구는 설치류[22,23]와 사람을 대상으로[24-26] 실시하여 보고되었다. Naphthalene을 섭취한 사람의 소변에서 naphthol이 확인되었으며[14,15] 이러한 결과는 naphthalene이 독성을 발휘하기 위해서는 간과 폐의 마이크로좀이 활성화되야 한다는 것을 의미하는 것이다. 간의 마이크로좀은 반응성이 있는 1,2-epoxide의 초기 합성과정을 촉진시키며 naphthalene을 dihydrodiol과 α-naphthol로 산화시킨다[27]. 2-Naphthoquinones는 용혈특징을 나타내며, 1,2-naphthoquinones는 토끼에게 백내장을 유발한다[3]. 그리고 naphthalene-1,2-oxide의 글루타치온 부가체는 폐 독성을 일으킨다[26].

Naphthalene을 흰쥐에게 투여한 경우, 투여량의 약 38%는 소변으로 배설된다. Naphthalene을 생쥐, 토끼[22], 그리고 흰쥐[22,23]에게 경구투여 하면 소변으로 1-naphthol,. 2-naphthol, 1,2-dihydroxynaphth alene-1,2-diol, 1-naphthylsulfuric acid, 그리고 1-naphthylglucuronide이 배설된다. 요중 대사물질인 methyl thioglucuronide and naphthol glucuronide의 생성은 위장관의 미생물의 작용도 어느 정도 포함하고 있다[23].

사람대상 연구

사람에 대한 naphthalene의 급성 경구 치사량은 5~15g 정도로 평가되었다[3]. 그러나 개인에 따라서는 2g 정도에서도 사망할 수도 있으며[28], 6g에서도 생존할 수는 있다[29]. Flury와 Zernik[30] 그리고 Sandmeyer[7]는 naphthalene 증기를 흡입하게되면 두통, 식욕감퇴 그리고 오심이 나타날 수 있다고 보고하였으며 시신경염, 각막손상, 신장장해도 야기될 수 있다고 보고하였다. Ghetti and Mariani[31]는 naphthalene에 약 5년간 노출된 근로자 21명 가운데 8명이 수정체가 불투명해졌다고 보고하였으며 다른 연구에서도 이러한 현상을 확인하였다[32-34].

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