In vitro **Toxicology**

Mini Ames Test (TA98/TA100); Non-GLP screening assay

Background Information

'The Ames test is used world-wide as an initial screen to determine the mutagenic potential of new chemicals and drugs.'

[1]Mortelmans K and Zeiger E (2000) *Mutation Research* **455**; 29-60

- The Ames test assesses the mutagenic potential of a compound. Ames testing uses strains of the bacterium *Salmonella typhimurium* which carry a defective (mutant) gene that renders them unable to synthesise the amino acid histidine. The Ames test investigates the potential of the test compound to result in a back mutation that causes the gene to regain its function and grow in a histidine-free medium.
- Mutagenic potential can be investigated in the Ames test in the presence or absence of a metabolising system (e.g., Aroclor 1254-induced rat liver S9 fraction) to identify pro-mutagens as well as directly acting mutagens.
- TA98 (frameshift mutation) and TA100 (base-pair substitution) are two common strains of *Salmonella typhimurium* assessed in Ames testing.
  Both strains have:
  - *rfa* mutations, a defective lipopolysaccharide layer that makes bacteria more permeable to larger molecules
  - *uvrB* mutations, which eliminate excision repair of DNA damage
  - the pKM101 plasmid, which increases error-prone repair of DNA damage

Protocol

Method
Ames MPF™ 98/100

Strains
Salmonella typhimurium TA98 and TA100 (others available on request)

Test Article Concentrations
6 concentrations up to 2 mg/plate or the highest concentration at which the compound is soluble

Metabolising System
Aroclor-1254 induced rat liver S9

Quality Controls
Vehicle control
Minus S9 - 2-nitrofluorene
- 4-nitroquinoline-N-oxide
Plus S9 - 2-aminoanthracene

Number of Replicates
3 replicates per concentration

Test Article Requirements
50mg of solid compound

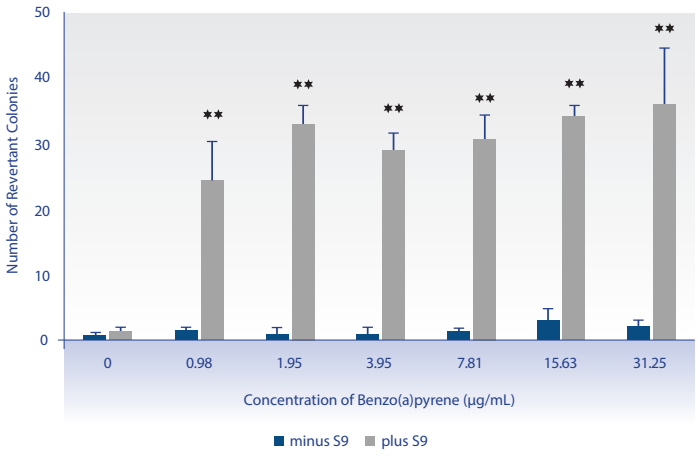
Data Delivery
Written report presenting protocol used and data

The *Salmonella* mutagenicity test was specifically designed to detect chemically induced mutagenesis. Over the years its value as such has been recognised by the scientific community, and by government agencies and corporations.[1]

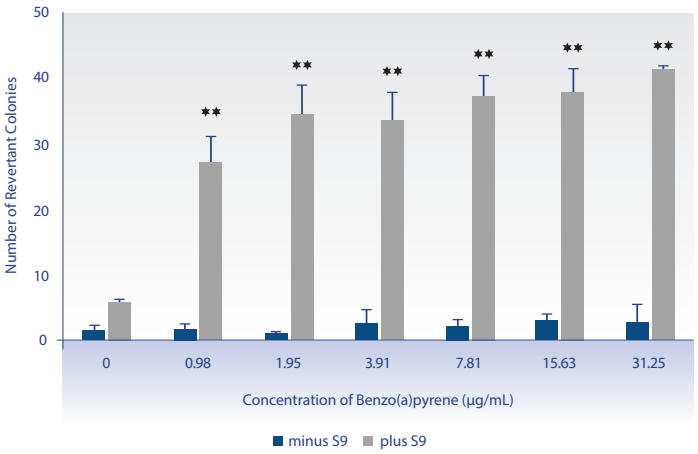
Figure 1

Graph illustrating the S9-dependent increase in the number of revertant colonies for benzo(a)pyrene in a). TA98 and b). TA100 (**p<0.01)

a). TA98



b). TA100



References

[1] Mortelmans K and Zeiger E (2000) *Mutat Res* **455**; 29-60