

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.'

'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

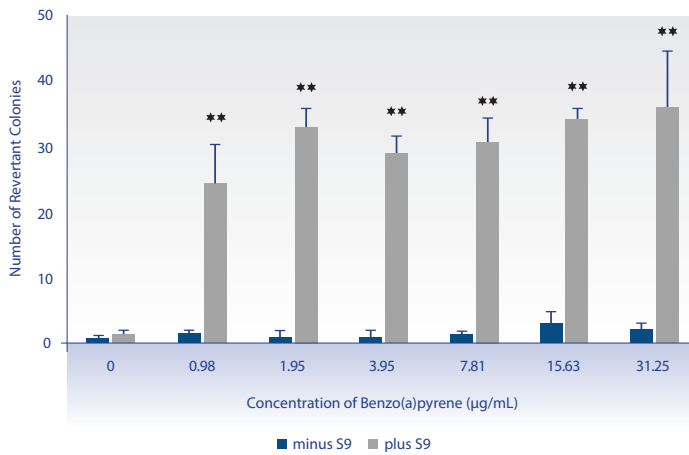
Written report presenting protocol used and data

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

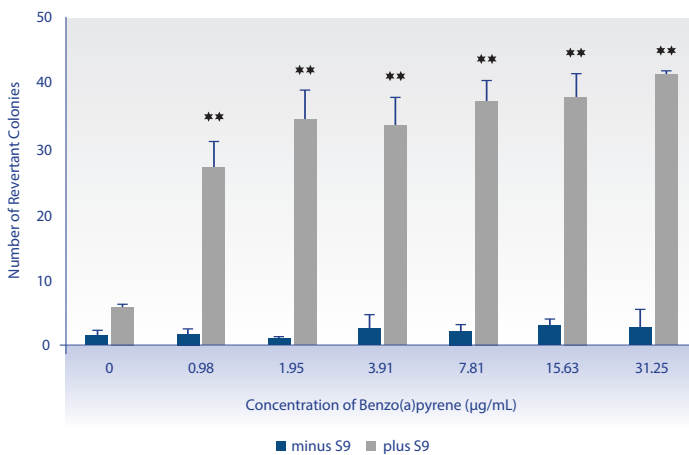
Figure 1

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