INVESTIGATION OF THE \textit{IN vivo} GENOTOXIC EFFECTS OF A TITANIUM DIOXIDE NANOMATERIAL IN \textit{LACZ} PLASMID-BASED TRANSGENIC MICE

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Results

\textbf{Background}

In a recent work, we showed that some rutile forms of titanium dioxide nanomaterials (TiO\textsubscript{2}) were able to induce a significant increase in the frequency of micronucleated human lymphocytes (Tavares et al., Toxicol in vitro, 2014).

For an anatase form of TiO\textsubscript{2} (NM-102, JRC repository), a significant genotoxic effect was observed for a single concentration, and the result of genotoxicity assessment was considered equivocal, thereby requiring further investigation.

\textbf{Objectives}

To investigate the genotoxic potential of NM-102 \textit{in vivo}, using an integrated analysis of multiple genotoxicity endpoints in the LacZ plasmid-based transgenic mouse model.

\textbf{Methods}

\textbf{Conclusions}

\begin{itemize}
  \item No mutagenic effects could be disclosed for NM-102 in the liver or spleen of lacZ transgenic mice, in the tested conditions.
  \item Histological and TEM analyses confirmed the accumulation of NM-102 in mouse liver and a moderate inflammatory effect in this organ.
  \item The overall integration of the data strengthens the weight of evidence of an absence of TiO\textsubscript{2} genotoxicity \textit{in vivo}, although the possibility of a secondary genotoxic effect driven by an inflammatory response within a longer time window or at higher doses cannot be excluded and should be further investigated.
\end{itemize}

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