Series GSE150567

Query DataSets for GSE150567

Status	Public on Dec 31, 2020
Title	Lung response to crystalline nanocellulose exposure in rats
Organism	Rattus norvegicus
Experiment type	Expression profiling by high throughput sequencing
Summary	Crystalline nanocellulose (CNC) is an emerging nanomaterial with multiple commercial and industrial applications. Occupational exposure to CNC during the production and/or use of products containing the nanomaterial potentially resulting in adverse health effects among workers is possible. Therefore, there is an immediate need to determine the toxicity potential of CNC. Rats were exposed to either air or CNC (20 mg/m^3, 6 hours/day, 5 days/week, 14 days) and lung toxicity was determined one day following termination of the exposures. Compared to the control rats, the CNC exposed rats exhibited moderate changes in lung histology. Lactate dehydrogenase activity and the number of phagocytes present in the bronchoalveolar lavage were higher in the CNC exposed rats, compared with the controls. Global gene expression profiling identified 531 genes whose expressions were significantly different (fold change >1.5 and FDR p <0.05) in the lungs of the CNC exposed rats, compared with the controls. In summary, the data demonstrated the induction of pulmonary toxicity and global gene expression changes in the lungs of the rats in response to inhalation exposure to CNC.
Overall design	Rats (n=6) were exposed by whole body inhalation to air or crystalline nanocellulose (20 mg/m3, 6 hours/day for 5 days/week for a total of 14 days of exposure). One day after the final exposure, lung tissue was collected, and Next Generation Sequencing was performed on the lungs of 6 rats per treatment group (air/crystalline nanocellulose).
Contributor(s)	Sager TM, Umbright CM, Joseph P
Citation(s)	Joseph P, Umbright CM, Roberts JR, Cumpston JL et al. Lung toxicity and gene expression changes in response to whole-body inhalation exposure to cellulose nanocrystal in rats. *Inhal Toxicol* 2021 Feb;33(2):66-80. PMID: 33602020

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Platforms (1) GPL18694 Illumina HiSeq 2500 (Rattus norvegicus)

Samples (12) GSM4552461 CNC_20_31_Lu
More... GSM4552462 CNC_20_32_Lu
GSM4552463 CNC_20_33_Lu

Relations

BioProject PRJNA632831
SRA SRP261603

Download family	Format
SOFT formatted family file(s)	SOFT
MINiML formatted family file(s)	MINiML
Series Matrix File(s)	TXT

Supplementary file	Size	Download	File type/resource
GSE150567_NCB_hisat2_Rnor6_counts.csv.gz	424.0 Kb	(ftp)(http)	CSV

SRA Run Selector

Raw data are available in SRA

Processed data are available on Series record