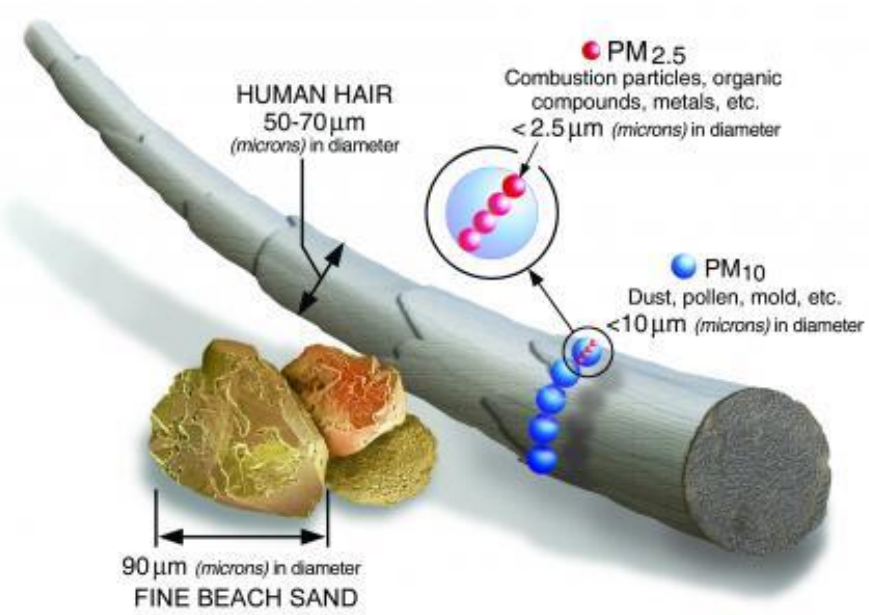


Is the effect of acute inhalation of fine dust on the testicles comparable to renal failure? : experimental model in rat

Bum Sik Tae, Jung Wan Yoo, Jae Young Park, Jae Hyun Bae
Department of Urology, Korea University Ansan Hospital, Korea University College of Medicine, Ansan, Korea

Introduction

✓ PM : Ambient particulate matter (PM)



- ✓ Aerodynamic diameter less than 2.5um
- ✓ Can penetrate the alveolar portions of the lung
- ✓ Can cause systemic effects
- ✓ Few study about impact of PM on the urologic disease including study about infertility



Fig 1. Representative histopathology of the Testis

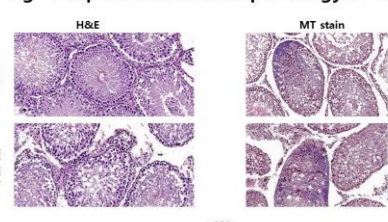
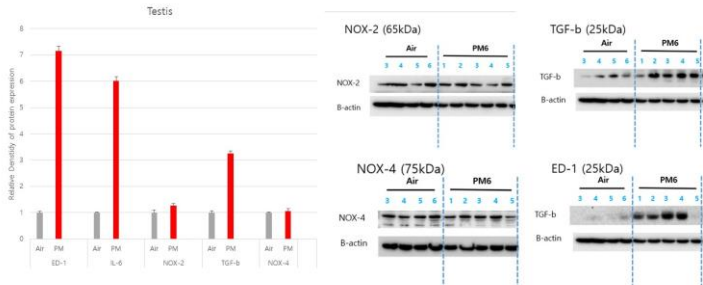


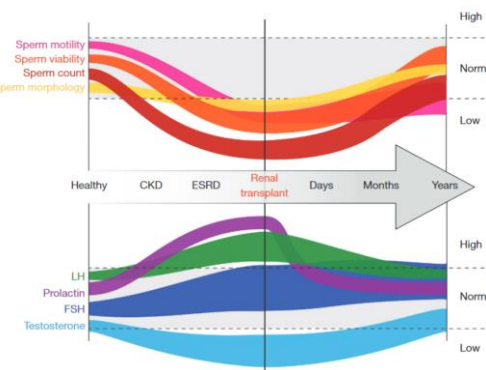
Fig 2. Western blot analysis of antibody expression in rat testis tissues



Our team suggests that PM2.5 exposure may engenders male reproductive function injury.

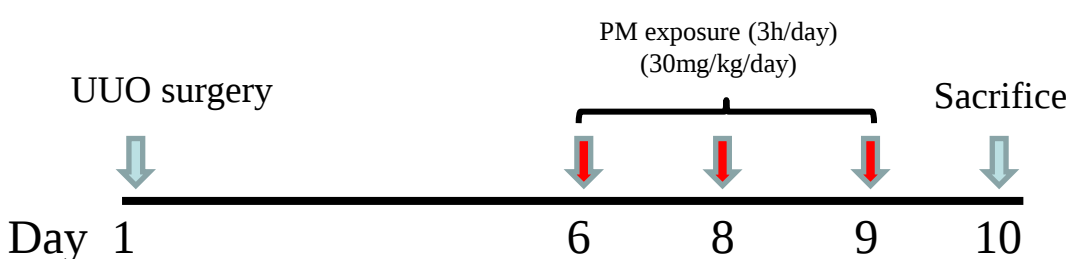
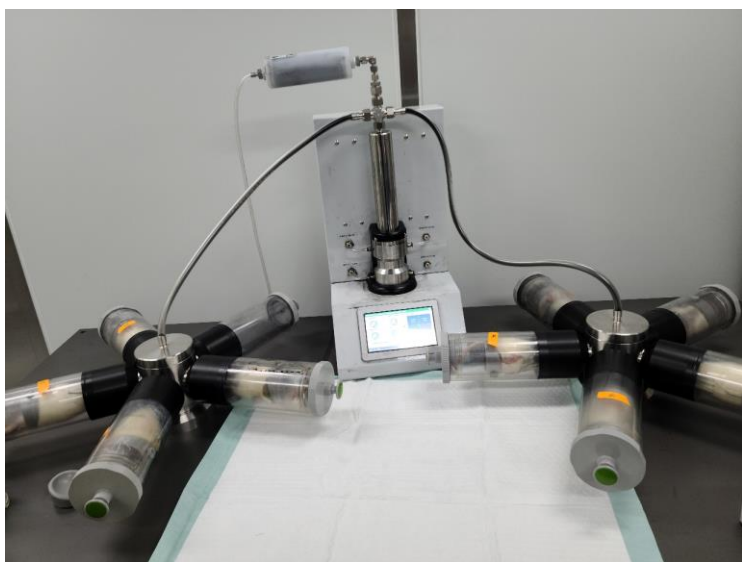
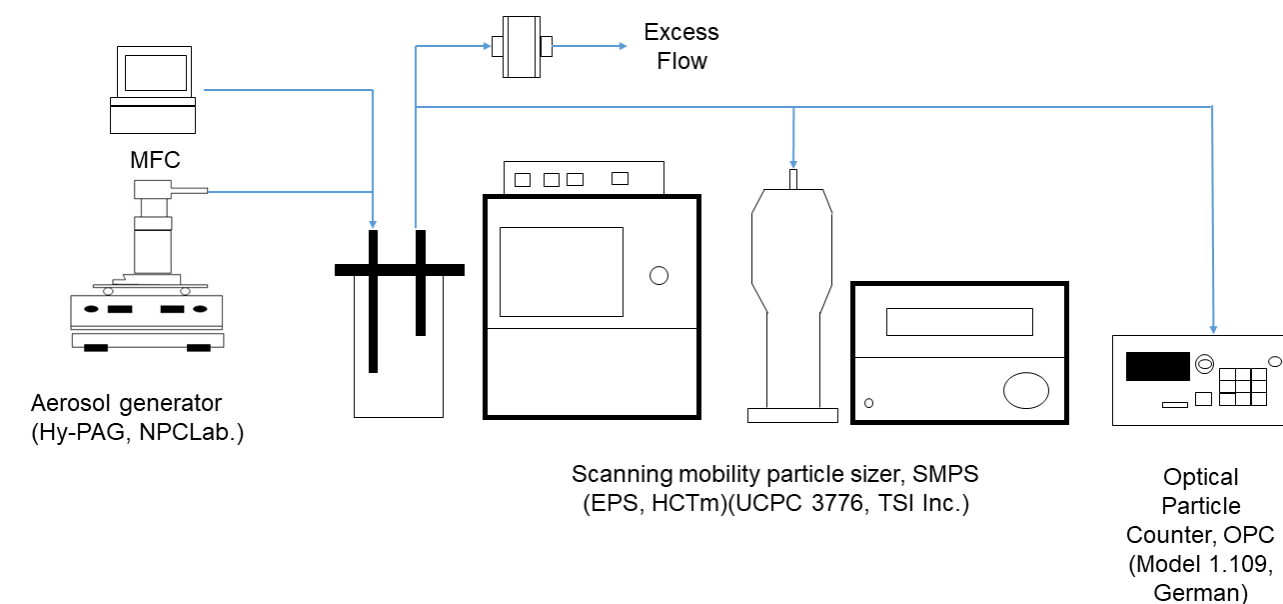
However, previous studies have shown a limitation in that we did not quantify expose fine dust.

The effect of PM on infertility through quantify exposure to PM through the nasal inhalation model was studied, and at the same time, analysis was conducted by comparing it with the renal failure model



Lundy et al.
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Methods



Results

	Control (n=10)	RI (n=10)	PM (n=10)	P-value*
Count (x 10 ⁶ /mL)	7.44±1.11	5.50±1.15	7.60±1.44	0.058
Abnormality rate (%)	7.80±2.71	15.50±5.18	16.40±6.06**	0.034
Motility rate (%)	28.00±6.26	20.13±6.13	25.60±6.74	0.190

Abnormal sperms included sperms of double tail deformity, sperms of double head deformity, sperms of folded body deformity, sperms of folded neck deformity and sperms of unstable head deformity.

*One way anova analysis. **p < 0.05 as compared with Control. RD (Renal insufficiency)

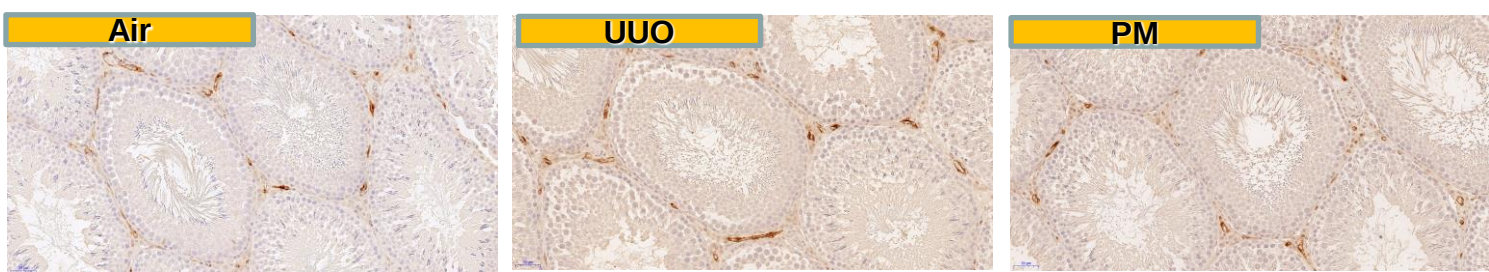


Figure. ACE2, ACE, Angiotensin, AT1R, AT2R and Renin expression in the Testis.

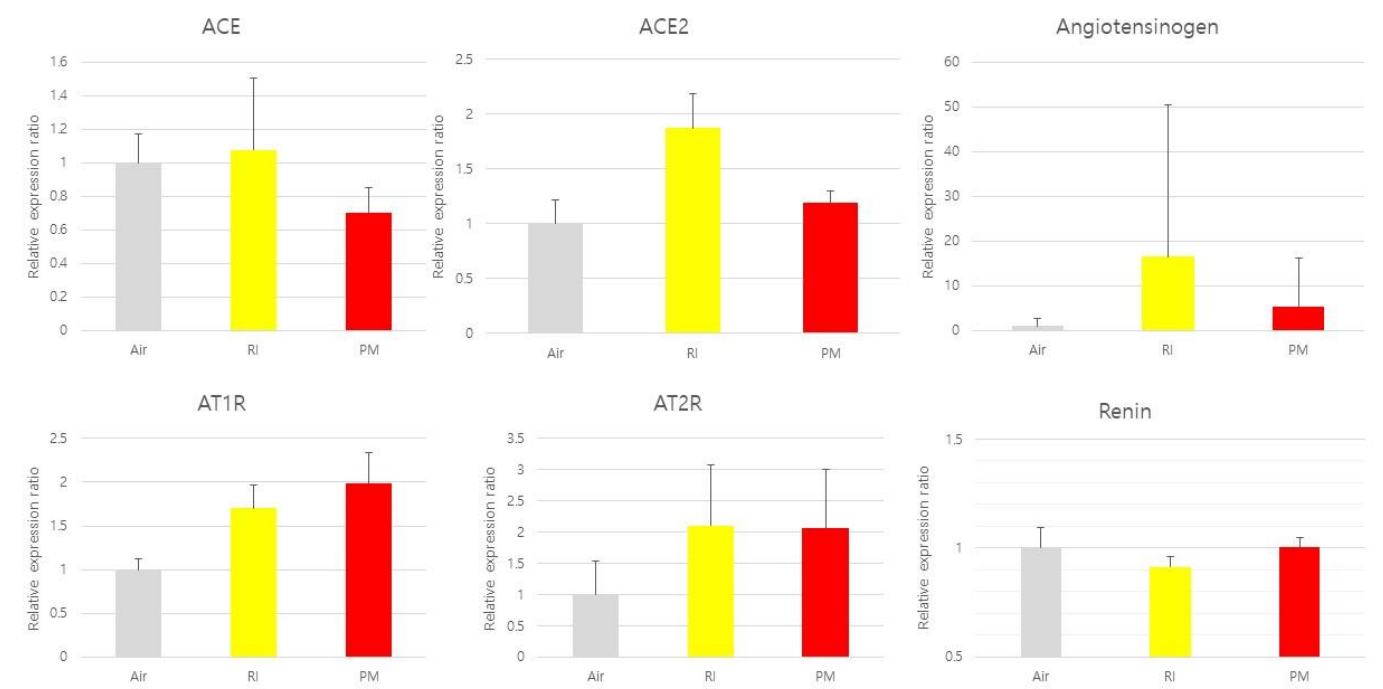
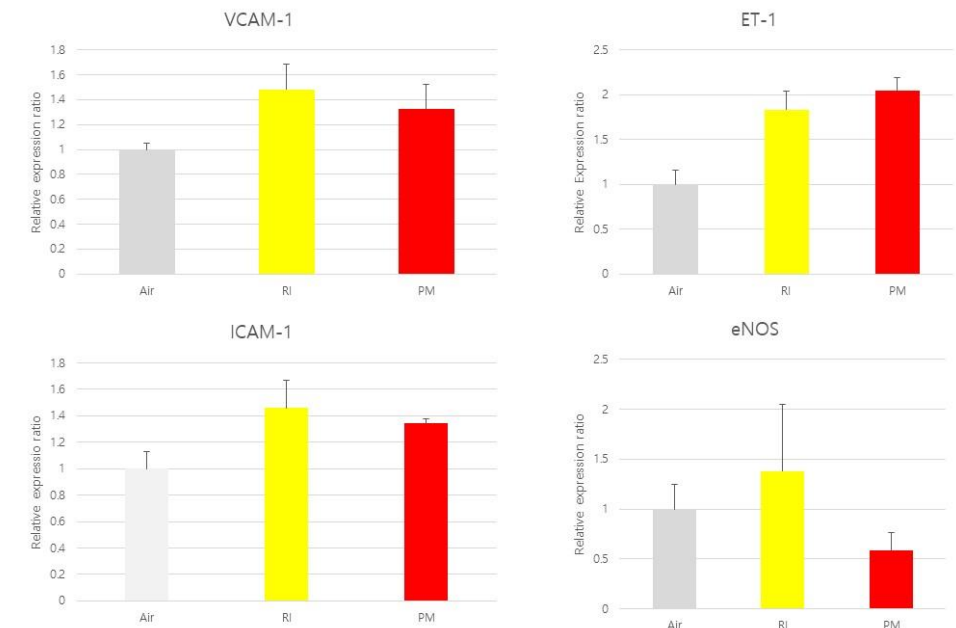


Figure. Systemic inflammation marker expression in the Testis.



Conclusions

In the nasal only PM inhalation model, acute PM inhalation has potential induced male reproductive dysfunctions in mice, which provided new insights into the toxicity of PM s in mammals.

In addition, The results of this PM group were comparable to those of patients with renal failure.

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