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### Loss of sperm DNA integrity and childhood cancer

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Sperm is highly vulnerable to oxidative damage to both nuclear and mitochondrial DNA due to minimal cytosolic anti-oxidants and deficient DNA damage repair mechanism. Recent studies have shown that there is increased incidence of children with Retinoblastoma (Rb) in children conceived by ART and in cases where fathers smoke. This study was planned to analyze the sperm DNA quality in fathers of children with non-familial Rb (NFRb). A total of 75 fathers of children with NFRb and 75 fathers of healthy children were recruited for the study. Semen samples were collected and normal semen parameters analyzed. Markers for Sperm DNA damage calculated as DNA fragmentation index (DFI), 8-hydroxy-2'-deoxyguanosine (8-OHdG) and Reactive Oxygen Species (ROS) levels were analyzed. The fathers underwent 6 months intervention of yoga and meditation. In the fathers of RB, the seminal mean ROS levels were significantly higher ( $36.086 \pm 1.83$  vs  $20.51 \pm 2.71$  RLU/s/million;  $p < 0.05$ ) than in controls. here was a significant increase in mean DFI levels ( $31.50 \pm 6.67$  vs  $21.9 \pm 9.4$ ;  $p < 0.001$ ) and the levels of 8-OHdG levels ( $66.02 \pm 2.91$  vs  $23.10 \pm 2.71$  pg/ml) were significantly higher ( $p < 0.05$ ) in fathers of Rb cases vs controls. Only 24 cases underwent 6 month practice of meditation/yoga and these cases showed significant decline in all 3 parameters. Oxidative damage to sperm DNA may be the aetiology of Rb as oxidized mutagenic DNA adducts persist even after fertilization. There was significant improvement in DNA integrity following practice of meditation/yoga and this may reduce incidence of childhood morbidity and even cancer.

### Biography

Rima Dada is Professor at All India Institute of Medical Sciences, New Delhi and Director Lab for Molecular Reproduction and Genetics. Dr Dada did MD and PhD in Medical Genetics. She has several national and international awards to her credit and has published over 100 articles in indexed journals of high impact and written over 65 chapters in books. She is on editorial board of several journals and her field of interest is understanding the role of genetic factors and oxidative stress in infertility and RSA and the impact of lifestyle intervention- meditation /yoga on sperm DNA quality.

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