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**Title:** Evaluation of 8-isoprostane as a biomarker of oxidative stress in children with obstructive sleep apnea syndrome

Dr. Susanna 15101 Fedeli susanna.fedeli@gmail.com MD ¹, Dr. Valentina 15102 Negro valenego@hotmail.it MD ¹, Ms. Maria Chiara 15103 Supino mariachiarasupino@alice.it ¹, Dr. Susanna 15104 Bonafoni susanna_bonafoni@libero.it MD ¹, Dr. Alessandra 15105 Tabarrini alessandra_tabarrini@hotmail.it MD ¹, Dr. Laura 15107 Papini laura_p85@hotmail.it MD ¹, Dr. Milena 15113 Margiotta milena_ma@hotmail.it MD ¹, Dr. Giovanna 15114 Gentile giovanna.gentile@uniroma1.it ² and Prof. Maria Pia 15115 Villa mariapia.villa@uniroma1.it MD ¹. ¹ NESMOS, Pediatric Unit, Sant'Andrea Hospital, La Sapienza University, Rome, Italy and ² NESMOS, Advanced Molecular Diagnostics Unit, Sant'Andrea Hospital, La Sapienza University, Rome, Italy.

**Body:** Background: Hypoxia-reoxygenation, characteristic of obstructive sleep apnea syndrome (OSAS), induces an increase of products of non-enzymatic free radical-catalyzed lipidic peroxidation, such as 8-isoprostane (8Isop). Aim: To evaluate urinary 8Isop values in children with OSAS. Methods: Thirty-eight children with OSAS (mean age: 6.23±2.08yr, range: 3.16-10.83yr M/F: 26/12), underwent urinary collection at the morning after nocturnal polysomnography. 8Isop levels were measured with an enzyme immunoassay and corrected by urinary creatinine (uCR) levels. Results: According to the AHI (Apnoea/Hypopnea index, cut off>5 events/hours of sleep) obtained from polysomnography, we found 20 subjects (Group 1) with snoring/minimum OSAS (mean AHI: 1.48±1.44 ev/hr; mean overnight oxygen saturation, SaO2: 97.64±0.63%) and 18 subjects (Group 2) with moderate/severe OSAS (mean AHI: 11.98±7.97 ev/hr; mean SaO2: 96.51±1.98%). Compared to Group 1, urinary 8Isop value was higher in Group 2 (1.10±0.66ng/mg uCR vs 0.76±0.36ng/mg uCR, p=0.046) and age was lower (5.45±1.69yr vs 6.93±2.18yr, p=0.033). We found a negative correlation between SaO2 and urinary 8Isop (r=-0.42; p=0.009) and a positive correlation between AHI and urinary 8Isop (r=0.32; 0.05<p<0.1). Linear regression analysis, performed using as dependent variable values of urinary 8Isop and as independent variables age, AHI, SaO2, showed that SaO2 and age were predictors for levels of urinary 8Isop (R:0.530; RSquare:0.281). Conclusion: Our data show that values of urinary 8Isop are related to OSAS severity and SaO2. Further studies are needed to assess usefulness of urinary 8Isop as a marker of inflammation likely due to oxidative stress.