

# Valutazione non invasiva della patobiologia polmonare in una coorte di lavoratori del settore acconciatura

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## KEY WORDS

Hairdressers; exhaled breath condensate; nitric oxide; hydrogen peroxide; malondialdehyde; 4-hydroxynonenal

## SUMMARY

«*Non-invasive assessment of lung pathobiology in hairdressers*». **Background:** Hairdressers are exposed to chemical agents with potentially irritant and sensitizing effects on airways. **Objectives:** To assess the presence of respiratory symptoms and biochemical and functional changes of the airways in a cohort of hairdressers. **Methods:** Respiratory symptoms, lung function tests, fractional exhaled nitric oxide ( $FE_{NO50}$ ) and selected oxidative stress biomarkers [hydrogen peroxide ( $H_2O_2$ ), malondialdehyde (MDA) and 4-hydroxynonenal (HNE)] in exhaled breath condensate (EBC) were assessed in 23 hairdressers on a rest day (Group 1); 12 workers (Group 2) were willing to perform the same tests at the beginning (BS) and at the end of a shift (ES) on the same working day. Eighteen subjects not occupationally exposed to airways irritants formed the control group. **Results:** Most of the hairdressers reported respiratory symptoms during work; however, all (except one) showed normal spirometry indexes.  $FE_{NO50}$  levels were within the reference limits and did not change comparing BS vs. ES sampling.  $H_2O_2$  and HNE values in EBC were higher in Group 1 ( $H_2O_2$ : 0,16 [0,05-0,19]  $\mu M$ ; HNE: 0,94 [0,82-1,22] nM) than in controls ( $H_2O_2$ : 0,05 [0,02-0,09]  $\mu M$ ; HNE: 0,61 [0,49-0,78] nM,  $p < 0,001$ ). In Group 2,  $H_2O_2$  and MDA levels were higher in EBC collected at ES (0,56 [0,23-3,62] mM and 5,21 [4,93-5,95] nM) in comparison with the BS values (0,11 [0,03-0,28] mM and 4,12 [3,46-5,16] nM,  $p < 0,001$  and  $p < 0,02$ , respectively). **Conclusions:** Increased levels of oxidative stress biomarkers are detectable in EBC of hairdressers, without impairment in respiratory function. Exhaled biomarkers of oxidative stress may be sensitive end points for evaluating early biochemical changes in the airways of hairdressers.