Results We included 36 patients (age mean 50.8 (SD 11.2) years, male/female 30/6, body mass index median 29.6 (IQR 26.9–34.9) kg/m^2, Epworth Sleepiness Scale 10.5 (4.6) points, oxygen desaturation index median 25.7 (16.0–49.1)/hour, apnoea-hypopnoea index median 28.1 (19.0–57.0)/hour). None of the patients reported skin discomfort, unpleasant tongue sensations or morning headache. There was no difference in patients' perceived sleep quality. There was a 59% reduction in mouth dryness after active treatment compared to sham-stimulation. There were no severe adverse events (Table).
Conclusion TES of the UA dilator muscles in OSA can be delivered throughout the night with few side effects and does not lead to arousal from sleep, if appropriately titrated.

Cough Sensation

S27 THE EFFECT OF P2X3 ANTAGONISM (AF–219) ON EXPERIMENTALLY EVOKED COUGH IN HEALTHY VOLUNTEERS AND CHRONIC COUGH PATIENTS

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Introduction and objectives Effective therapies for chronic cough are a significant unmet need. Recently a P2X3 antagonist (AF-219), markedly reduced cough frequency in two phase 2 trials, but the role of P2X3 receptors and their ligand (adenosine triphosphate, ATP) in chronic cough is not well-understood. This study assessed the effect of P2X3 antagonism on cough evoked by capsaicin and ATP in healthy volunteers and chronic cough patients.
Method We performed a double-blind, placebo-controlled, randomised, 4-period crossover study. During each period (≥48 h apart), cough challenges were performed 2h after single doses of study medication [capsaicin (0.48–1000 μM) periods 1/2 and ATP (0.227–929 μmol/mL) periods 3/4]. Two cohorts were enrolled; cohort (1) 14 healthy volunteers (HV, mean age 37.5 yrs, 100% male) and 12 chronic cough (CC, mean age 60.3 yrs, 17% male) received AF-219 300mg/placebo and cohort (2) 12 HV (mean age 34.8 yrs, 100% male) and 12 CC (mean age 57.8 yrs, 25% male) received AF-219 50 mg/placebo. Cough challenges consisted of four inhalations of each doubling concentration of tussive agent, from a dosimeter 30s apart. Coughs in the first 15s were counted and challenges continued to the maximum tolerated dose. The concentrations evoking at least 2 and 5 coughs, C2 and C5 (from inhalation 1) were analysed using mixed effect models; pharmacodynamic modelling was used to estimate Emax/ED50.
Results AF-219 had no effect on capsaicin C2 or C5 at 300 mg or 50 mg in HV or CC (all $p > 0.05$). For ATP challenges, AF-219 300 mg significantly increased C2 in CC (AF-219 10.8 μmol/mL vs. placebo 2.3 μmol/mL, $p = 0.005$) but not HV ($p = 0.135$), whereas AF-219 50mg significantly increased C2 in both groups (CC 40.4 μmol/mL vs. 2.8 μmol/mL, $p = 0.002$ and HV 114.4 μmol/mL vs. 20.7 μmol/mL, $p = 0.046$). AF-219 had no significant effect on ATP C5 at either dose in HV (all $p > 0.05$), but in CC patients 50mg AF-219 (but not 300mg) increased C5 (70.1 μmol/mL vs. 17.1 μmol/mL, $p = 0.027$). Of note, ATP inhalation evoked less coughing than capsaicin, limiting the utility of the C5 endpoint.
Conclusions P2X3 antagonism reduced cough responses to ATP, particularly in patients with CC, but did not alter cough responses to an off-target tussive agent.

S28 DETERMINANTS OF COUGH FREQUENCY IN ADULT HEALTHY VOLUNTEERS

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Introduction Objective cough monitoring is a useful tool to investigate patterns of cough frequency and to evaluate novel cough treatments. The VitaloJAKTM (Vitalograph Ltd, UK) ambulatory cough monitor is a validated semi-automated system for the quantification of cough over 24 hours. Objective cough rates have yet to be quantified in large groups of healthy controls and the influences of subject factors are unclear.
Objective To assess objective cough frequency in a large group of healthy adults across a range of ages.
Method Objective 24 hour cough monitoring was performed using the VitaloJAKTM in adult healthy volunteers; those with a smoking history of >20 pack years and <6 months abstinence were excluded. The recordings were compressed using custom-written software and cough counted manually by trained cough counters and the daytime, night-time and total cough rates calculated. Daytime and total cough rates were log transformed for analysis. Independent t-tests (daytime and total) and Mann-Whitney U test (night-time) assessed the effect of gender and previous smoking. Spearmans correlation coefficients evaluated the relationships between cough frequency, age, BMI, and pulmonary function.
Results Sixty healthy volunteers were recruited; 27 (45%) males, median age 40 yrs (range 20–74), median FEV_1 103.0% predicted (81–141), median FVC 105.5% predicted (82–151), median BMI 24.6 kg/m2 (16.8–39.8), 48 (80%) of subjects had never smoked, median smoking history in the ex-smokers 2.9 (0.1–17) pack years. Median (IQR) 24 h cough rate was 0.17 c/h (0.05–0.87) with daytime rate of 0.26 c/h (0.63–1.35) and night-time rate of 0.00 c/h (0.00–0.12). Males coughed significantly more than females over 24hours [median 0.42 c/h (IQR 0.13–1.21) vs. 0.13 c/h (0.04–0.59), $p = 0.038$] and during the day [0.37 c/h (0.11–1.42) vs. 0.19 c/h (0.0–0.91), $p = 0.036$], but not during the night ($p = 0.852$). Cough frequency was not significantly correlated with age, BMI, FEV_1 or FVC. Cough frequency was no different between never and ex-smokers for daytime or 24 h ($p = 0.46$ and $p = 0.20$) but overnight was slightly lower for ex- than never smokers [median 0.00 c/h (0.00–0.09) vs. 0.12 c/h (0.0–0.64), $p = 0.037$].
Conclusions In healthy adults, spontaneous cough frequency is unaffected by age, BMI, and pulmonary function. Interestingly, males coughed more frequently than females, in contrast to our current knowledge of gender differences in cough reflex sensitivity.

S29 A RANDOMISED CONTROLLED TRIAL OF OVER THE COUNTER MEDICINE CS1002 FOR ACUTE COUGH

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