

**Abstract P242 Table 1** Summary statistics from the fitted model and comparisons between chronic cough patients and healthy volunteers are presented below as adjusted geometric means and the pairwise differences ratios of the adjusted means

C <sub>5</sub> Capsaicin Concentration – Adjusted Means and Difference Ratios between Subject Types					
	Chronic Cough Patients (N = 10)	Healthy Volunteers (N = 12)	Chronic Cough Patients vs. Healthy Volunteers		
	Adjusted Geometric Mean (μM)	Adjusted Geometric Mean (μM)	Geometric Mean Ratio with 95% CI		pairwise p-value
Overall	35.2	77.4	0.46	0.20, 1.09	0.078
By Infusion Type					
Acid	29.5	83.8	0.36	0.15, 0.88	0.025
Saline	41.8	71.4	0.42	0.20, 0.87	0.019
By Infusion Type and Order					
Acid					
Acid-Saline	20.0	114.3	-	-	-
Saline-Acid	43.5	61.3	-	-	-
p-value	0.039	0.367	-	-	-
Saline					
Acid-Saline	30.8	105.4	-	-	-
Saline-Acid	56.7	48.3	-	-	-
p-value	0.245	0.167	-	-	-

#Ratio <1: Chronic Cough Patients required lower concentrations than Healthy Volunteers.  
Ratio >1: Chronic Cough Patients required higher concentrations than Healthy Volunteers

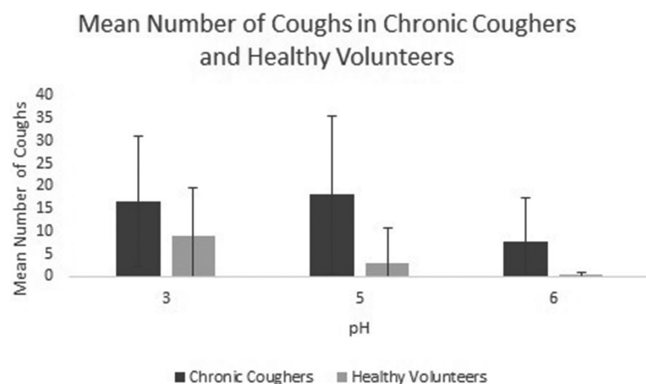
**P243 ASSESSING THE EFFECT OF PH ON CITRIC ACID COUGH CHALLENGES IN CHRONIC COUGH PATIENTS AND HEALTHY VOLUNTEERS**

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**Introduction** Citric acid has been used for over 6 decades in cough challenge studies, however despite this, the mechanism of its tussive effect is still not fully understood. We assessed the cough response to citric acid solutions, at different levels of acidity (pH) to determine what role this plays in the induction of cough. Healthy volunteers and chronic cough patients were compared.

**Methods** 20 chronic cough patients and 20 healthy volunteers were recruited and underwent three cough challenges at 48 h apart. Each visit involved 5 repeated inhalations of a 300 mM citric acid solution. Whilst the concentration of the citrate cation was kept constant, the pH was varied by titration with sodium hydroxide, to achieve pH 3, 5 and 6. These represent the Pka values of the individual acid moieties within citric acid. The total number of coughs elicited per study day was recorded.



**Abstract P243 Figure 1**

**Results** Participants were gender matched, each group consisting 12 females. Two participants withdrew and were not included in the analysis. In healthy volunteers, 60% of people coughed at pH3 (average coughs 9), 30% of people coughed at pH5 (average coughs 3), and 10% of people coughed at pH6 (average coughs 0). In contrast, 74% of chronic coughers coughed at pH 3 (average coughs 16), 89% coughed at pH 5 (average coughs 18) and 63% coughed at pH 6 (average coughs 7). Thus there was a clear dose response to decreasing pH in healthy volunteers but not in chronic cough patients. The standard deviation of cough challenge on an individual day was determined to explore the variability of response to inhalation challenge. At pH 3 CC vs HV was  $x$  vs  $y$ , at pH 5  $x$  vs  $y$  and at pH 6  $x$  vs  $y$  ( $p > 0.01$ ).

**Discussion** As we have previously reported, chronic cough patients are hypersensitive to citric acid challenge. However the response to individual challenge is much more variable than in HV, suggesting the cough reflex circuitry in these patients is 'unstable'. This was particularly shown at higher pH where cough was virtually abolished in healthy volunteers but not chronic cough patients. It has been widely suggested that cough hypersensitivity resides in up regulation and interplay of different peripheral receptors. That a single stimulus increases the variability of response in a pathological state suggests that hypersensitivity to citric acid resides in a complex central rather than peripheral mechanism.

**Asthma quality improvement**

**P244 THE IMPACT OF "SEVEN DAY WORKING" ON RESPIRATORY INPATIENT ACTIVITY AT ST HELENS AND KNOWSLEY NHS TRUST. – "THE SLOW DRIFT MODEL"**

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