

Supplementary Information of

“Breath-Based Stratification of Asthma Severity Using the MISTRAL Platform with Integrated H₂S Sensor and Clinical Validation”

By

R. Germinario¹, E. Andriani¹, P. Tondo², P. Soccio², A. Ia Grasta¹, I. Cafagna³, D.

Lacedonia², F. Dell’Olio^{1,*a}, and G. Scioscia^{2,a}

¹Micro Nano Sensor Group, Polytechnic University of Bari, Via E. Orabona, 4, Bari, 70125, Italy

²Department of Medical and Surgical Sciences – University of Foggia; Institute of Respiratory Diseases – Policlinico Riuniti di Foggia, Foggia, Italy

³Predict S.p.A., Viale Adriatico, Padiglione 105, 70132 Bari, Italy

*francesco.dellolio@poliba.it

^athese authors contributed equally to this work as co-last (senior) author

Table S1 - Clinical parameters in mild-to-moderate and severe asthma patients, with p-values from two-tailed Student’s t-test and Mann-Whitney U test.

Parameter	Mild-to-Moderate	Severe	t-test (p)	Mann–Whitney U (p)
Age (years)	48.6 ± 13.3	61.3 ± 11.3	0.01	0.02
ACT score	20.0 ± 3.9	20.6 ± 4.4	0.74	0.68
FEV ₁ (%)	96.3 ± 16.0	86.8 ± 20.1	0.20	0.27
FEV ₁ (L)	2.9 ± 1.1	2.2 ± 0.8	0.04	0.01
FEV ₁ /FVC	73.9 ± 11.6	74.4 ± 11.4	0.92	1.00
FVC (%)	99.1 ± 19.4	96.3 ± 18.0	0.71	0.84
FVC (L)	3.9 ± 1.4	3.0 ± 1.0	0.09	0.06
VC (%)	103.5 ± 24.2	98.3 ± 26.2	0.68	0.79
VC (L)	3.9 ± 1.2	2.7 ± 1.0	0.05	0.08
PEF (%)	112.0 ± 36.3	87.4 ± 17.0	0.06	0.05
MEF ₂₅ (%)	92.0 ± 38.8	91.3 ± 32.6	0.96	0.85
MEF ₅₀ (%)	90.4 ± 41.8	110.2 ± 54.6	0.38	0.64
MEF ₇₅ (%)	103.3 ± 47.7	84.6 ± 30.5	0.32	0.34
Blood eosinophils (%)	4.1 ± 2.7	2.1 ± 1.9	0.05	0.05
Blood eosinophils (cell/ μ l)	302.7 ± 225.9	160.0 ± 171.3	0.09	0.13
FeNO (ppb)	25.8 ± 24.3	16.6 ± 8.0	0.21	0.52

ACT = Asthma Control Test; FEV₁ = Forced Expiratory Volume in 1 second; FVC = Forced Vital Capacity; PEF = Peak Expiratory Flow; MEF = Maximum Expiratory Flow; VC = Vital Capacity; FeNO = Fractional exhaled Nitric Oxide.

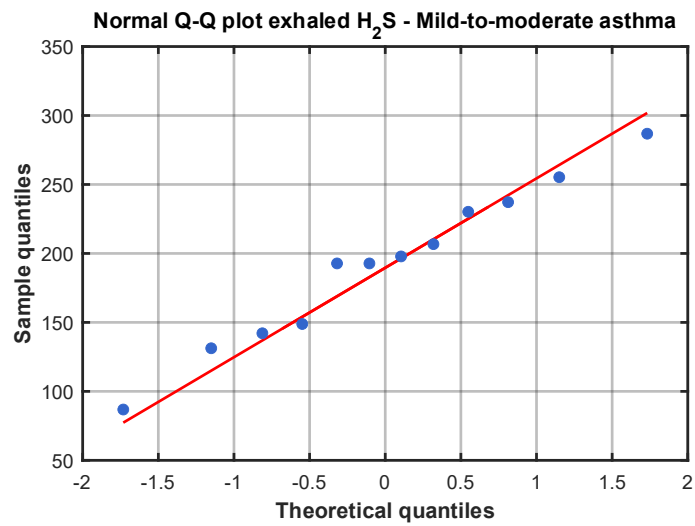


Figure S1 - Q-Q plot of exhaled H₂S levels in patients with mild-to-moderate asthma.

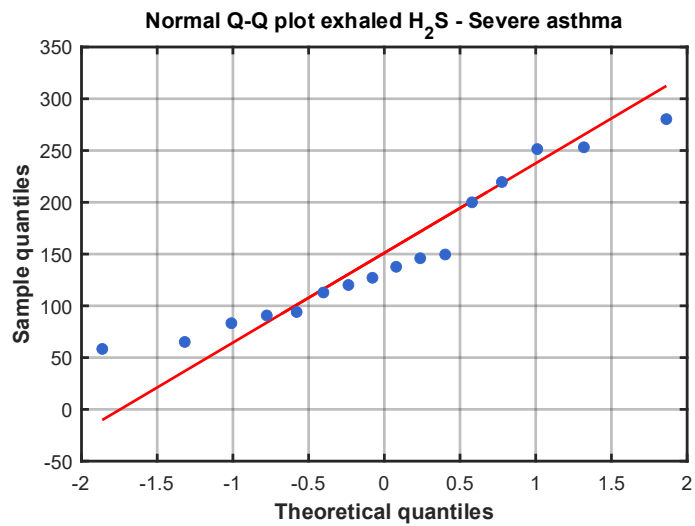


Figure S2 - Q-Q plot of exhaled H₂S levels in patients with severe asthma.