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論文名	呼吸道疾病患者吐氣一氧化氮濃度之相關性研究-以氣喘及慢性阻塞性肺疾病為例

稱 (中)	
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其 他 題 名	
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關 鍵 字 (中)	吐氣一氧化氮濃度、肺功能、空氣污染物質、氣喘、慢性阻塞性肺疾病
關 鍵 字 (英)	FeNO、PFT、Air pollutants、Asthma、COPD
摘 要 (中)	<p>摘要 背景: 國內流行病學調查顯示國人氣喘盛行率逐年增加, 空氣污染物質如二氧化硫 (Sulfur dioxide, SO₂)、二氧化氮 (Nitric dioxide, NO₂)、臭氧 (Ozone, O₃)、一氧化碳 (Carbon monoxide, CO) 與懸浮微粒 (Particulate matter, PM) 及環境因子等已被證實與呼吸症狀的惡化具有正相關。具有非侵襲性及安全性特色的吐氣一氧化氮濃度 (The fractional concentration of nitric oxide in exhaled breath, FeNO) 檢測方式最近被許多研究用為評估呼吸道疾病發炎的指標之一, 與空氣污染物的關係也逐漸受到重視。故本研究擬利用吐氣一氧化氮濃度的檢測, 探討室外及室內等環境因子與呼吸道功能之間的相關性。方法: 本研究為一橫斷性研究 (cross-sectional study), 採樣期間從 2005 年 2 月至 2006 年 3 月間, 共收取 27 名氣喘患者、28 名慢性阻塞性肺疾病患者及 29 名控制組個案。本研究利用問卷紀錄研究個案之基本資料、疾病史、生活習慣、用藥狀況及室內拜香習慣, 以光化學分析儀 (CLD 77 AM sp, ECO Physics, Switzerland) 偵測吐氣一氧化氮濃度, 及肺功能測試 (pulmonary function test, PFT) 反應病患肺部支氣管變化, 另外選取距離個案居住地最近之環保署空氣品質監測站, 下載 SO₂、NO₂、O₃、CO、PM 等空氣污染物質之月平均濃度作為個案之暴露濃度, 使用皮爾森相關係數進行吐氣一氧化氮濃度、肺功能參數及空氣污染物質之相關分析。結果: 本研究所調查之氣喘及慢性阻塞性肺疾病患者之吐氣一氧化氮濃度平均值±標準差分別為 24.06±20.05 ppb 及 19.23±21.21 ppb, 分別與控制組個案 14.73±9.50 ppb 相比較, 在氣喘組個案呈現顯著差異 (p</p>
摘 要 (英)	<p>Abstract Background: Epidemiological studies have showed that the prevalence rate of asthma increases rapidly in recent year. Many environmental air-pollutants, such as sulfur dioxide (SO₂), nitric dioxide (NO₂), ozone (O₃), carbon monoxide (CO) and particulate matter (PM) have been proved to correlate with the worsening of respiratory symptoms in patients with airway diseases. The fractional concentration of nitric oxide in exhaled breath (FeNO) is a noninvasive and safe method and has been used to evaluate inflammatory status of respiratory diseases recently. Little study has been focus on the influence of environmental air-pollutants to the FeNO in different patients of airway diseases. Therefore, this study was designed to attempt to assess the relationships between different indoor and outdoor air-pollutants and the severity</p>

of airway function in patients with asthma and chronic obstructive pulmonary disease (COPD) by using FeNO and pulmonary function test (PFT). Methods: This cross-sectional study recruited 27 asthma patients、28 COPD patients and 29 control cases from march 2005 to march 2006. Information including subject's gender, age, disease-history, living-habits, medications and resident environmental factors were collected by questionnaire. A Chemiluminescence's analyzer (CLD 77 AM sp, ECO Physics, Switzerland) was utilized to monitor FeNO and PFT was performed subsequently. Monthly mean concentrations of air pollutants from ambient monitoring site operated by Taiwan Environmental Protection Agency (EPA) which locate nearby subject's residence were also collected for comparison. Pearson correlation coefficient was used to analyze the association between FeNO, parameters of pulmonary function test and air pollutants. Results: The concentration of FeNO in control group (14.73 ± 9.50 ppb, mean \pm SD) was significant lower than asthma group (24.06 ± 20.05 ppb) (p

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<p>參 考 文 獻</p>	<p>參考資料 Adamkiewicz G, Ebelt S, Syring M, Slater J, Speizer FE, Schwartz J, Suh H, Gold DR. Association between air pollution exposure and exhaled nitric oxide in an elderly population. <i>Thorax</i> 2004;59:204-9. Akkurt I, S?mer H, ?zsahin SL, G?nl?g?r U, ?zdemir L , Dogan ?, Demir DA, Seyfikli Zet. Prevalence of asthma and related symptoms in Sivas, central Anatolia. <i>J of asthma</i> 2003;40(5):551-6. Albers M, Schermer T, Boom GVD, Akkermans R, Schayck CV, Herwaarden CV, Weel CV. Efficacy of inhaled steroids in undiagnosed subjects at high risk for COPD: result of the detection, intervention, and monitoring of COPD and asthma program. <i>Chest</i> 2004;126:1815-24. Amsterdam Van JGC, Nierkens S, Vos SG, Opperhuizen A, Loveren Van H, Steerenberg PA. Exhaled Nitric Oxide : A Novel Biomaker of Adverse Respiratory Health Effects in Epidemiological Studies. <i>Arch Environ Health</i> 2000;55(6):418-23. Amsterdam Van JGC, Verlaan BPJ, Loveren Van H, Elzakker BGV, Vos SG, Opperhuizen A, et al. Air Pollution is Associated with increased level of Exhaled Nitric Oxide in Nonsmoking Healthy Subjects. <i>Arch Environ Health</i> 1999;54(5):331-5. Andrew PJ, Mayer B. Enzymatic function of nitric oxide synthases. <i>Cardiovasc Res</i> 1999;43:521-31. ATS. Recommendations for Standardized Procedures for the Online and Offline Measurement of Exhaled Lower Respiratory Nitric Oxide and Nasal Nitric Oxide in Adults and Children-1999. <i>Am J Respir Crit Care Med</i> 1999;160:2104-17. ATS. Standardization of spirometry:1994 update. <i>Am J Respir Crit Care Med</i> 1995;152:1107-36. Bardana E J. Indoor pollution and its impact on respiratory health. <i>Ann Allergy Asthma Immunol</i> 2001;87(Suppl):33-40. Bell ML, Dominici F, Samet JM. A Meta-Analysis of Time-Series Studies of Ozone and Mortality With Comparison to the National Morbidity, Mortality, and Air Pollution Study. <i>Epidemiology</i> 2005;16(4):436-45. Berkman N, Avital A, Breuer R, Bardach E, Springer C, Godfrey S. Exhaled nitric oxide in the diagnosis of asthma : comparison with bronchial provocation. <i>Thoax</i> 2005;60:383-88. Brindicci C, Ito K, Resta O, Pride NB, Barnes PJ, Kharitonov SA. Exhaled nitric oxide from lung periphery is</p>

increased in COPD. *Eur Respir J* 2005;26(1):52-9. Brook RD, Brook JR, Urch B, Vincent R, Rajagopalan S, Silverman F. Inhalation of Fine Particulate Air Pollution and Ozone Causes Acute Arterial Vasoconstriction in Healthy Adults. *Circulation* 2002;105:1534-36. Chapman KR, Tashkin DP, Pye DJ. Gender bias in the diagnosis of COPD. *Chest* 2001;119:1691-5. Clini E, Bianchi L, Foglio K, Porta R, Vitacca M, Ambrosino N. Effect of Pulmonary Rehabilitation on Exhaled Nitric Oxide in Patients With Chronic Obstructive Pulmonary Disease. *Thorax* 2001;56:519-23. Clini E, Bianchi L, Pagani M, Ambrosino N. Endogenous nitric oxide in patients with stable COPD: correlates with severity of disease. *Thorax* 1998;53:881-3. Clini E, Bianchi L, Vitacca M, Porta R, Foglio K, Ambrosino N. Exhaled Nitric Oxide and Exercise in stable COPD patients. *Chest* 2000;117:702-7. Corradi M, Pelizzoni A, Majori M, Cuomo A, de' Munari E, Pesci A. Influence of atmospheric nitric oxide concentration on the measurement of nitric oxide in exhaled air. *Thorax* 1998;53:673-76. Custovic A, Murray CS, Gore RB, Woodcock Ashley. Controlling indoor allergens. *Ann Allergy Asthma Immunol* 2002;88:432-442. Desqueyroux H, Pujet JC, Prosper M, Moullec YL, Momas I. Effects of air pollution on adults with chronic obstructive pulmonary disease. *Arch Environ Health* 2002;57(6):554-60. Devereux G. ABC of chronic obstruction pulmonary disease: Definition, epidemiology, and risk factors. *BMJ* 2006;332(13):1142-4. Franklin PJ, Stick SM, LeSoif PN, Ayres JG, Turner SW. Measuring Exhaled Nitric Oxide Levels in Adults- the importance of Atopy and Airway Responsiveness. *Chest* 2004;126:1540-5. GINA- the Global Initiative For Asthma. <http://www.ginasthma.org/Guidelineitem.asp?i1=2&i2=1&intId=37>. GINA_POCKET_GUIDE_2005:10/18/05 11:57 AM. Global Initiative for Chronic Obstructive Lung Disease. Pocket guide to COPD diagnosis, management, and prevention. Update July,2003. Gwynn RC. Risk factors for asthma in US adults: results from the 2000 behavioral risk factor surveillance system. *J Asthma* 2004;41(1):91-8. Hong SJ, Lee MS, Sohn MH, Shim JY, Han YS, Park KS, Ahn YM, Son BK, Lee HB, Korean ISAAC Study Group. Self-reported prevalence and risk factors of asthma among Korean adolescents: 5-year follow-up study, 1995-2000. *Clin Exp Allergy* 2004;34:1556-62. Hubbard AK, Symanowicz PT, Thibodeau M, Thrall RS, Schramm CM, Cloutier MM, et al. Effect of nitrogen dioxide on ovalbumin-induced allergic airway disease in a murine model. *J Toxicol Environ Health* 2002;Part A, 65:1999-2005. Huurre TM, Aro HM, Jaakkola JJK. Incidence and prevalence of asthma and allergic rhinitis: a cohort study of Finnish adolescents. *J Asthma* 2004;41(3):311-17. Jansen KL, Larson TV, Koenig JQ, Mar TF, Fields C, Stewart J, Lippmann M. Associations between health effects and particulate matter and black carbon in subjects with respiratory disease. *Environ Health Perspect* 2005;113(12):1741-6. Kan H, Chen B. Air pollution and daily mortality in Shanghai: a time-series study. *Arch Environ Health* 2003;58(6):360-7. Kazaks A, Uriu-Adams JY, Stern JS, Albertson TE. No significant relationship between exhaled nitric oxide and body mass index in people with asthma. *J Allergy Clin Immunol* 2005;116:929-30. Kharitonov SA, Barnes PJ. Clinical aspects of exhaled nitric oxide. *Eur Respir J* 2000;16:781-92. Koenig JQ, Jansen K, Mar TF, Lumley T, Kaufman J, Trenga CA,

Sullivan J, Liu LJ, Shapiro GG, Larson TV. Measurement of offline exhaled nitric oxide in a study of community exposure to air pollution. *Environ Health Perspect* 2003;111(13):1625-9. Koenig JQ, Mar TF, Allen RW, Jansen KL, Lumley T, Sullivan JH, Trenga CA, Larson T, Liu LJ. Pulmonary effects of indoor- and outdoor-generated particles in children with asthma. *Environ Health Perspect* 2005;113(4):499-503. Kuo HW, Lai JS, Lee MC, Tai RC, Lee MC. Respiratory effects of Air pollutants among Asthmatics in Central Taiwan. *Arch Environ Health* 2002;57(3):194-200. L.Mukasa JS, Oyana TJ, Johnson C. Local ecological factors, ultrafine particulate concentrations, and asthma prevalence rates in Buffalo, New York, neighborhoods. *J Asthma* 2005;42:337-48. Lagorio S, Forastiere F, Pistelli R, Iavarone I, Michelozzi P, Fano V, Marconi A, Ziemacki G, Ostro BD. Air pollution and lung function among susceptible adult subjects: a panel study. *Environ Health* 2006;5:11. <http://www.ehjournal.net/content/5/1/11>. Lee YL, Lin YC, Hwang BF, Guo YL. Changing prevalence of asthma in Taiwanese adolescents: two survey 6 years apart. *Pediatr Allergy Immunol* 2005;16:157-64. Lewis TC, Robins TG, Dvonch JT, Keeler G J, Yip FY, Mentz GB, Lin X, Parker EA, Israel BA, Gonzalez L, Hill Y. Air pollution-associated changes in lung function among asthmatic children in Detroit. *Environ Health Perspect* 2005;113:1068-75. Loganathan RS, Stover DE, Shi W, Venkatraman E. Prevalence of COPD in women compared to men around the time of diagnosis of primary lung cancer. *Chest* 2006;129:1305-12. Lundberg JON, Szallasi TF, Weitzberg E, Rinder J, Lidholm J, Anggard A, et al. High nitric oxide production in human paranasal sinuses. *Nature Med* 1995;1(4):370-3. Manfreda J, Sears MR, Becklake MR, Chan-Yeung M, Dimich-Ward H, Siersted HC, Ernst P, Sweet L, Til LV, Bowie DM, Anthonisen NR. Geographic and gender variability in the prevalence of bronchial responsiveness in Canada. *Chest* 2004;125:1657-64. Marco DR, Accordini S, Cerveri I, Corsico A, Sunyer J, Neukirch F, K?nzli N, Leynaert B, Janson C, Gislason T, Vermeire P, Svanes C, Anto JM, Burney P, for the European Community Respiratory Health Survey (ECRHS) Study Group. An international survey of chronic obstructive pulmonary disease in young adults according to GOLD stages. *Thorax* 2004;59:120-5. Meren M, R-Kivioja A, J-Pruljan L, Loit HM, Ronmark E, Lundback B. Low prevalence of asthma in westernizing countries-Myth or reality? Prevalence of asthma in Estonia- a report from the "FinEsS" study. *J Asthma* 2005;42:357-65. Maziak W, Loukides S, Colpitt S, Sullivan P, Kharitonov SA, Barnes PJ. Exhaled nitric oxide in chronic obstructive pulmonary disease. *Am J Respir Crit Care Med* 1998;157:998-1002. Meyts I, Proesmans M, Boeck KD. Exhaled Nitric Oxide Corresponds With Office Evaluation of Asthma Control. *Pediatr Pulmonol* 2003;36:283-9. Miravittles M, Roza CDL, Naberan K, Iamban M, Gobartt E, Mart?n A, Chapman KR. Attitudes Toward the Diagnosis of Chronic Obstructive Pulmonary Disease in Primary Care. *Arch Bronconeumol* 2006;42(1):3-8. Montuschi P, Kharitonov SA, Barnes PJ. Exhaled carbon monoxide and nitric oxide in COPD. *Chest* 2001;120:496-501. Ojoo JC, Mulrennan SA, Kastelik JA, Morice AH, Redington AE. Exhaled breath condensate PH and exhaled nitric oxide in allergic asthma and in cystic fibrosis. *Thorax* 2005;60:22-6. Olin A-C, Andersson E, Andersson M, Granung G, Hagberg S, Tor?n

K. Prevalence of Asthma and Exhaled Nitric Oxide are Increased in Bleachery Workers Exposed to Ozone. *Eur Respir J* 2004;23:87-92. Persson M, Wiklund N, Gustafsson L. Endogenous Nitric Oxide in Single Exhalations and the Change during Exercise. *Am J Respir Crit Care Med* 1993;148:1210-14. Piacentini GL, Bodini A, Vano L, Zanolla L, Costella S, Vicentini L, Boner AL. Influence of environmental concentrations of NO on the exhaled NO test. *Am J Respir Crit Care Med* 1998;158:1299-1301. Quanjer Ph.H, Tammeling GJ, Cotes JE, Pedersen OF, Peslin R, Yernault JC. Lung volumes and forced ventilatory flows: official statement of the European respiratory society. *Eur Respir J* 1993;6(suppl. 16):5-40. Rees J. Prevalence. *BMJ* 2005;331:443-5. Schikowski T, Sugiri D, Ranft U, Gehring U, Heinrich J, Wichmann H-E, Kr?mer U. Long-term air pollution exposure and living close to busy roads are associated with COPD in women. *Respir Res* 2005;6:152. Schindler C, K?nzli N, Bongard J-P, Leuenberger P, Karrer W, Rapp R, Monn C, Ackermann-Liebrich U. Short-term variation in air pollution and in average lung function among never-smokers. *Am J Respir Crit Care Med* 2001;163:356-61. Selnes A, Nystad W, Bolle R, Lund E. Diverging prevalence trends of atopic disorders in Norwegian children. Results from three cross-sectional studies. *Allergy* 2005; 60:894-9. Silkoff PE, Martin D, Pak J, Westcott JY, Martin RJ. Exhaled nitric oxide correlated with induced sputum findings in COPD. *Chest* 2001;119:1049-55. Smith AD, Cowan JO, Brassett KP, Herbison GP, Taylor R. Use of Exhaled Nitric Oxide Measurements to Guide Treatment in Chronic Asthma. *N Engl J Med* 2005;352:2163-73. Steerenberg PA, Nierkens S, Fischer PH, Loveren Van H, Opperhuizen A, Vos JG, et al. Traffic-related Air pollution Affects Peak Expiratory Flow, Exhaled Nitric Oxide, and Inflammatory Nasal Markers. *Arch Environ Health* 2001;56(2):167-74. Sunyer J, Atkinson R, Ballester F, Tertre AL, Ayres JG, Forastiere F, Forsberg B, Vonk JM, Bisanti L, Anderson RH, Schwartz J, Katsouyanni K. Respiratory effects of sulphur dioxide: a hierarchical multicity analysis in the APHEA 2 study. *Occup. Environ. Med.* 2003;60:e2(<http://www.occenvmed.com/cgi/content/full/60/8/e2>) Sunyer J, Basagana X, Belmonte J, Ant? JM. Effect of nitrogen dioxide and ozone on the risk of dying in patients with severe asthma. *Thorax* 2002;57:687-93. Tager IB, Balmes J, Lurmann F, Ngo L, Alcorn S, K?nzli N. Chronic Exposure to Ambient Ozone and Lung Function in young Adults. *Epidemiology* 2005;16(6):751-59. Tee AKH, Hui KP. Effect of Spirometric Maneuver, Nasal Clip, and Submaximal Inspiratory Effort on Measurement of Exhaled Nitric Oxide Levels in Asthmatic Patient. *Chest* 2005;127:131-4. Thomsen SF, Ulrik CS, Kyvik KO, Larsen K, Skadhauge LR, and Steffensen I, Backer V. The incidence of asthma in young adults. *Chest* 2005;127:1928-34. Trasande L, Thurston GD. The role of air pollution in asthma and other pediatric morbidities. *J Allergy Clin Immunol* 2005;115:689-99. Therminarias A, Flore P, Favre-Juvin A, Oddou M-F, Delaire M, Grimbert F. Air contamination with nitric oxide: effect on exhaled nitric oxide response. *Am J Respir Crit Care Med* 1998;157:791-795. Tunnicliffe WS, Harrison RM, Kelly FJ, Dunster C, Ayres JG.. The effect of sulphurous air pollutant exposures on symptoms, lung function, exhaled nitric oxide, and nasal epithelial lining fluid antioxidant concentrations in normal and asthmatic adults. *Occup Environ Med* 2003;60:15-21.

	<p>Uysal N, Schapira RM. Effects of ozone on lung function and lung diseases. <i>Curr Opin Pulm Med</i> 2003;9:144-50. Vagaggini B, Taccola M, Cianchetti S, Carnevali S, Bartoli ML, Bacci E, Dente FL, Franco AD, Giannini D, Paggiaro PL. Ozone exposure increases eosinophilic airway response induced by previous allergen challenge. <i>Am J Respir Crit Care Med</i> 2002;166:1073-7. Wang XS, Tan TN, Shek LPC, Chng SY, Hia CPP and Ong NBH, Ma S, Lee BW, Goh DYT. The prevalence of asthma and allergies in Singapore; data from two ISAAC surveys seven years apart. <i>Arch Dis Child</i> 2004;89:423-6. Weiland SK, H?sing A, Strachan DP, Rzehak P, Pearce N, the ISAAC Phase One Study. Climate and the prevalence of symptoms of asthma, allergic rhinitis, and atopic eczema in children. <i>Occup Environ Med</i> 2004;61:609-15. William WB and Robert FJL. Advances in immunology: asthma. <i>N Engl J Med</i> 2001;344(5): 350-62. Wong GWK, Ko FWS, Hui DSC, Fok TF, Carr D, Mutius EV, Zhong NS, Chen YZ, Lai CKW. Factors associated with difference in prevalence of asthma in children from three cities in China: multicentre epidemiological survey. <i>BMJ</i> 2004;329:486-8. Wong GWK, Leung TF, Ko FWS, Lee KKM, Lam P and Hui DSC, Fok TF, Lai CKW. Declining asthma prevalence in Hong Kong Chinese schoolchildren. <i>Clin Exp Allergy</i> 2004;34:1550-55. Wu JH, Lin RS, Hsieh KH, Chiu WT, Chen LM, Chiou ST, Huang KC, LiuWL, Chiu HI, Hsiao HC, Fang SH, Chen HW, Lin JM, Sung FC. Adolescen asthma in northern Taiwan. <i>Chinese J Pub Health</i> 1998;17:214-25. Xu F, Yin XM, Zhang M, Shen HB, Lu LC, Xu YC. Prevalence of Physician-Diagnosed COPD and its Association with Smoking Among Urban and Rural Residents in Regional Mainland China. <i>Chest</i> 2005;128:2818-23. Yang CY, Tien YC, Hsieh HJ, Kao WY, Lin MC. Indoor Environment Risk Factors and Childhood Asthma: A Case-Control Study in a Subtropical Area. <i>Pediatr Pulmonol</i> 1998;26:120-124. Yang CY, Lin MC, Hwang KC. Childhood Asthma and the Indoor Environment in a Subtropical Area. <i>Chest</i> 1998;114:393-7.</p>
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