

**BACTERIOLOGICAL PROFILE IN EXACERBATION OF
CHRONIC OBSTRUCTIVE PULMONARY DISEASE
(COPD)**

A

DISSERTATION

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BY

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ABSTRACT

Chronic obstructive pulmonary disease (COPD) is a major cause of chronic morbidity and mortality and represents a substantial economic and social burden throughout the world. This study examined the microbial pattern of COPD in both inpatient and outpatient in Shree Birendra hospital, Chhauni from November 2009 to February 2010. To detect the pathogen responsible for exacerbation, sputum sample was collected. The sputum smear was examined microscopically and those containing less than 10 squamous epithelial cells and more than 25 neutrophils were only accepted. So out of 191 only 158 met the inclusion criteria. Different culture media were used to isolate the pathogens and antibiotics susceptibility pattern of the isolates was also studied using Kirby-Bauer's disc diffusion method. There was significant association between age, spirometric value, number of exacerbations last year and color of sputum ($p < 0.001$); however, there was no significant association between sex, smoking habit, geographical distribution (living within valley and out of valley), fuel used for cooking purpose, previous history of hospitalization, family size with culture positive cases. Of the 158 sample, 70 (44.3%) were culture positive. The most common bacterium isolated was *Streptococcus pneumoniae* (20; 28.6%); the others included *Klebsiella pneumoniae* (15; 21.1%) *Moraxella catarrhalis* (13; 18.6%), *Pseudomonas aeruginosa* (12; 17.1%), *Staphylococcus aureus* (6; 8.6%), and *Streptococcus pyogenes* (4; 5.7%). *Haemophilus influenzae* was not isolated in any case. The most effective antibiotic in *S. pneumoniae* was found to be tetracycline and sulfomethoxazole (85%), ciprofloxacin (75%) in *K. pneumoniae*, amoxicillin/clavulanic acid and ceftazidime (92.3%) in *M. catarrhalis*, piperacillin/tazobactam (75%) in *P. aeruginosa*, methicillin and erythromycin (100%) in *S. aureus* and penicillin and cotrimoxazole (100%) in *S. pyogenes*.

Streptococcus pneumoniae was the most predominant bacteria responsible for the exacerbation of COPD which was highly susceptible to tetracycline and sulfomethaxazole.

Keywords: COPD, exacerbation, sputum culture.

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LIST OF ABBREVIATIONS

1-AT	:	1-antitrypsin
AECB	:	Acute exacerbation of chronic bronchitis
ATS	:	American thoracic society
BALF	:	Bronchioalveolar lavage fluid
BMI	:	Body mass index
COPD	:	Chronic obstructive pulmonary disease
FEV ₁	:	Forced expiratory volume in one second
FVC	:	Forced vital capacity
Gm	:	Gram
GOLD	:	Global initiative for chronic obstructive lung disease
IL	:	Interleukin
kPa	:	Kilo Pascal
MA	:	MacConkey agar
MHA	:	Mueller Hinton agar
mcg	:	microgram
MMP	:	Matrix metallo proteinase
MSA	:	Mannitol salt agar
ml	:	Milliliter
PaO ₂	:	Arterial partial pressure of oxygen
PDE	:	Phosphodiesterase
PPM	:	Potentially pathogenic microorganism
SBH	:	Shree Birendra Hospital
TNF-	:	Tumor necrosis factor-
TSI	:	Triple Sugar Iron
TUTH	:	Tribhuvan University Teaching Hospital
VP	:	Voges Proskauer
WHO	:	World health organization