



INDUSTRIAL TRAINING REPORT

student industrial work experience scheme (SIWES 2)

UNDERTAKEN AT

NATIONAL INSTITUTE FOR PHARMACEUTICAL
RESEARCH AND DEVELOPMENT, IDU ABUJA, NIGERIA.

BY

Jessa Jennifer Oghenerukevwe

16/MHS07/018

A STUDENT INDUSTRIAL WORK EXPERIENCE SCHEME REPORT
ON

**The Pharmacological Evaluation of Acetic acid induced and
hydrochloride acid induced ulcers**

SUBMITTED
TO

DEPARTMENT OF PHARMACOLOGY AND THERAPEUTICS

COLLEGE OF MEDICINE AND HEALTH SCIENCES

AFE BABALOLA UNIVERSITY, ADO-EKITI
EKITI STATE-NIGERIA

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE
AWARD OF THE DEGREE OF BACHELOR OF SCIENCE (B.SC) IN
PHARMACOLOGY.

APRIL 2020

CERTIFICATION

This is to certify that this work was undertaken by Jessa Jennifer Oghenerukevwe at NATIONAL INSTITUTE FOR PHARMACEUTICAL RESEARCH AND DEVELOPMENT, IDU ABUJA, and supervised by Pastor Oni John, with the report prepared and presented to the department of pharmacology and therapeutics, Afe Babalola University, Ado Ekiti (ABUAD), Ekiti state, Nigeria during the 2018/2019 student industrial work experience scheme (SIWES 2).

DEDICATION

This report is dedicated to my friends and family for their support during my industrial training and my lectures for all the knowledge that they have instilled in me throughout my stay in the university, I will also like to thank my industrial supervisor mr Sunday and my institutional supervisor pastor Oni for all their support and supervision during my industrial training and the lab technician mr Solomon who was a great teacher and mentor to me, I pray that as you all have helped me to achieve this goal so the good lord shall help you achieve all that you have worked and prayed for.

Jessa Jennifer.O

400 LEVEL

DEPARTMENT OF PHARMACOLOGY AND THERAPEUTICS

TABLE OF CONTENTS

TITLE

CERTIFICATION

DEDICATION

CHAPTER ONE

INTRODUCTION

Meaning of SIWES

Purpose of SIWES

Objective of SCHEME

CHAPTER TWO

INTRODUCTION

Ulcer

Acetic acid induced ulcer

Hydrochloric acid induced ulcer

CHAPTER ONE

INTRODUCTION:

Students' Industrial Work Experience Scheme (SIWES) is a human capital formation programme through industrial attachment for which students are expected to have a practical experience on the basis of theories and principles acquired in the teaching-learning process. However, the prevalence of the inability of participants of SIWES to secure employment after the programme casts doubt on the continuing relevance of SIWES to the contemporary industrial development drive in Nigeria.

Brief History of SIWES

SIWES started in 1974 with 748 students from 11 institutions of higher learning participating. By 1978, participation on the Scheme increased to about 5000 students from 32 institutions. The ITF withdrew from the management of the Scheme in 1979 owing to problems of organizational logistics and increased financial burden associated with the rapid expansion of SIWES. Consequently, the Federal Government funded the Scheme through the National Universities

Commission (NUC) and the National Board for Technical Education (NBTE) who managed the SIWES for five years (1979-1984). The supervising agencies – NUC and NBTE, operated the Scheme in conjunction with their respective institutions during the period. The industrial Training Fund (ITF) was thereafter directed by the Federal Government to take charge and resume the responsibility of managing the Scheme in collaboration with the supervising/regulatory agencies. That is, NUC, NBTE and the National Commission for Colleges of Education (NCCE).

PURPOSE OF SIWES

SIWES is an acronym for Students Industrial Work Experience Scheme. The scheme is a skill training programme designed to prepare and expose students of the University to the industrial work situation they are likely to meet after graduation. The need for the establishment of the scheme arose when there was a growing concern among industrialists that graduates of institutions of higher learning lacked adequate practical background required for employment in industries.

AIMS AND OBJECTIVES OF SIWES

1. To provide students with industrial skills and needed experience while the course of study.
2. To create conditions and circumstances, which can be as close as possible to the actual workflow.
3. To prepare specialists who will be ready for any working situations immediately after graduation.
4. To teach students the techniques and methods of working with facilities and equipment that may not be available within the walls of an educational institution.
5. To give students the ability to try and apply the given knowledge.

The objectives of SIWES programme are all about strengthening future employees. Such program is successful attempt to help students to understand the underlying principles of their future work. After passing the programs, the student can concentrate on the really necessary factors of his or her work.

CHAPTER TWO

Pharmacological Evaluation of Acetic acid induced and hydrochloride acid induced ulcers

1. Introduction

Test for Ulcer

Introduction

Ulcers are the areas of degeneration and necrosis of gastro intestinal mucosa exposed to acid of the alimentary tract that is exposed to hydrochloric acid and pepsin they occur most commonly (98-99%) in either the duodenum or the stomach in the ratio 4:1. Ulcers can occur in the stomach, where they are called gastric ulcers or they can occur in the first portion of the intestine called as duodenal ulcers. "Peptic Ulcer" is the term used to describe either or both of these two types of ulcer. Ulcers cause gnawing, burning pain in the upper abdomen. These symptoms frequently occur several hours following a meal, after the food leaves the stomach but while acid production is still high. Instead of pain, some patients experience intense hunger or bloating. Other patients have no pain but have black stools, indicating that the ulcer is bleeding. Bleeding is a very serious complication of ulcers. Ulcers occurs due to imbalance between the offensive (gastric acid secretion) and defensive (gastric mucosal integrity) factors. The aggressive and protective factors in the stomach are acid pepsin secretion, mucosal barrier, blood flow, cellular regeneration, prostaglandins and epidermal growth factors. Sometimes the gastric mucosa is continuously exposed to potentially injurious agents such as pepsin, bile acids, food ingredients, bacterial products (*H.pylori*) and drugs. Factors such as stress, smoking, nutritional deficiency and ingestion of NSAID'S all can increase the incidence of gastric ulcers. It is reported that prolonged anxiety, emotional stress, hemorrhagic surgical shock, burns and trauma are known to cause severe gastric irritations.

Acetic acid induced ulcers

Principle

The acetic acid model is suitable for chronic peptic ulcers. It has been used to evaluate the effect of potential drugs or to test materials on the healing process of chronic peptic ulcers and their anti-secretory and cyto-protective effects. The model easily and reliably produces round, deep ulcers in the stomach and duodenum of mice, rats, guinea pigs, cats, dogs and monkeys. The feature produced by the model bears resemblance to human ulcers, its therefore been found suitable for use in assessing agents with potential ulcer healing effects in chronic peptic ulcers.

Material

Rats, dissecting sets, operating board, catgut, clipper, cotton wool, methylated spirit, diazepam, ketamine, syringes and needles, cicatrin

Animals

Swiss albino mice and rats of both sexes sourced from the Animal Facility Centre of the Department of Pharmacology and Toxicology, NIPRD were used. The animals were maintained under standard environmental condition with free access to standard diet and water.

Procedure

Rats were anaesthetized with intraperitoneal injection of diazepam 10 mg/kg and ketamine 50 mg/kg. The abdomen was opened and the stomach was visualized. A cylindrical glass tube (6 mm in diameter) was tightly placed upon the anterior serosal surface of the glandular portion of stomach 1 cm away from the pyloric end. 50% acetic acid (0.06 ml/animal) was instilled into the tube and allowed to remain for 60 sec on the gastric wall. After removal of acid solution, the abdomen was closed in two layers and animals were caged and fed normally. Standard and test drug administered orally 4 h after the application of acetic acid and continued up to 9 days after induction of ulcer. The animals were then sacrificed after 18 h of the last dose of drug on 10th day of experiment to assess the ulcer size and healing. Ulcer index was calculated based upon the product of length and width (mm²/ rat) of ulcers (Takagi et al. 1970).

Hydrochloric acid induced ulcers

Principle

Hydrochloric acid induces the ulcer by enhancing the acidity of the stomach contents.

Procedure

Rats weighing 150-180gms were weighed, coded and randomized into various groups according to body weight. One hour after treatment with the test, reference drug or the control vehicle, 0.3 ml of a solution containing 0.3 M HCl and 60 percent alcohol was orally administered to each rat apart from the negative control. After 1 h the rats were anaesthetized. The stomach was removed and cut open along the greater curvature, cleared of residual matter with saline and the inner surface was examined for ulceration.

Ulcer index and % ulcer protection were determined. Stomachs were preserved in 10% for histopathological study.

Ulcer index

- 0 - Normal stomach
- 0.5 - Red coloration
- 1 - Spot ulcers
- 1.5 - Haemorrhagic streaks
- 2 - Ulcer > 3 mm but < 5 mm
- 3 - ulcers > 5 mm

Calculation of ulcer Index

$$UI = UN + US + UP \times 10^{-1}$$

Where; UI = Ulcer Index

UN = Average of number of ulcer per animal

US = Average of severity score

UP- Percentage of animal with ulcer

Percentage protection was calculated by the formula

$$UI = \frac{UI_{control} - UI_{test}}{UI_{control}} \times 100$$

CONCLUSION

Several methods are there to evaluate the anti ulcerogenic activity of the synthetic and natural products like aspirin induced ulcers, alcohol induced ulcers, pyloric ligation induced ulcers, indomethacin induced ulcers, histamine induced ulcer, reserpine induced ulcers, serotonin induced ulcer, acetic acid induced ulcers, Hydrochloric acid induced ulcers. Most of the researcher could evaluate the efficacy of various anti ulcer drugs by these methods.

REFERENCES

K. Takagi, S. Okabe, and R. Saziki, "A new method for the production of chronic gastric ulcer in rats and the effect of several drugs on its healing," *Japanese Journal of Pharmacology*, vol. 19, no. 3, pp. 418–421, 1970

Ojeleye, J.O (1994) The Effect of Co-Operative Learning on Students Academic Achievement in Biology in Senior Secondary Schools in Nigeria. Unpublished PhD. Thesis, Obafemi Awolowo University Ile-Ife.

Olaiya .S. (1998) Training for Industrial Development in Nigeria.

Oladeji S. (2000) An Evaluative Study of The Centre for External Studies University of Ibadan, Ibadan Nigeria. 1988-1998. Unpublished PhD Thesis, University of Ibadan, Ibadan.

Yabani, D. (198