PERSONAL PROFILE

DR. HAMAAD AHMAD

(30 Years of diversified experience)

.Consultant Pharmacist

.Director/Pharmaceutical Trainer

.Clinical Research Expert

.Motivational Speaker

.Chief Pharmacist/Advisor

OBJECTIVE:

- To share my diversified experiences, as educationist, trainer, researcher, manufacturer & as consultant in health care system.
- To cultivate a culture of safe use of medicines through Clinical researches and from good manufacturing and storage practices.

1987-1889: DEMONSTRATOR
Subject: Pharmacognosy
College of Pharmacy-Punjab University

1987-1889: CLINICAL RESEARCH ASSOCIATE
Novartis Pharmaceuticals (PVT.) Ltd

2003-2014: CEO
Winilton Pharmaceuticals (PVT.) Ltd

2014-2024: Founder/Dean/Director
Yusra Institiute of Pharmaceuticals Sciences


CREDENTIALS

81.dph.52
رجسٹریشن نمبر
REGISTERED NUMBER

Serial No. MP 00370

620.
رول نمبر
ROLL NUMBER

UNIVERSITY OF THE PUNJAB

پنجاب یونیورسٹی

1989

1981

This is to Certify

تصدیق کی جاتی ہے

that Hamad Ahmad

کہ حماد احمد

son/daughter of Shafiq Ahmad

ولد/بنت شفیق احمد

of the Faculty of Pharmacy, University of the Punjab, Lahore

آف فیکلٹی آف فارمیسی - پنجاب یونیورسٹی - لاہور

has obtained the Degree of

نے اس یونیورسٹی کے امتحان منعقدہ ستمبر ۱۹۸۱ کی بنا پر

Master of Philosophy
(Pharmacognosy)

ماسٹر آف فلاسفی
(فارماکوگنوسی)

in this University at the Examination held

in September, 1989

Marks obtained 605/900

کی سند حاصل کی

نمبر حاصل کردہ ۶۰۵/۹۰۰

CHANCELLOR
چانسلر

CONTROLLER OF EXAMINATIONS
کنٹرولر امتحانات

LAHORE: 13 JUN 1990

لاہور:

ATTESTED
Asif Iqbal
Attestation Officer
HIGHER EDUCATION COMMISSION OF PAKISTAN
Rs.500 1056294
15 SEP
Higher Education Commission
Government of Pakistan
Islamabad

UNIVERSITY OF THE PUNJAB

Notification No. M.Phil(Pharmacy)

The result of the following candidates in the subject of Pharmacognosy for the M.Phil(Pharmacy) (Part-I two years course) Annual Examination, 1989, held in September, 1989, is declared as under:-

Maximum marks in this examination are 900.

Note:-This Notification is issued errors and omissions excepted, as a notice only. An entry appearing in it does not in itself confer any right or privilege independently to the grant of a proper Degree/Diploma/Certificate which will be issued under the Regulations in due course.

Roll No.	Regd.No.	Name of the candidate	Result	Marks obtd. Subject/s to reappear & period.
Faculty of Pharmacy U.U. Lahore.				
616	82.dph.16	Iram Rashid D/o Muhammad Rashid Chaudry	Pass	650
617	84.dph.70	Uzma Niaz D/o Rafiq Alam Niaz	Pass	568
618	82.dph.53	Syed Qulb-i-Hussain Naqvi S/o Syed Nawazish Ali Shah	Pass	538
619	76.i.44	Muhammad Qaisar S/o Fazal Haq	Pass	564
620	81.dph.52	Hamaad Ahmad S/o Shafiq Ahmad	Pass	609
621	87.dph.7	Muhammad Ismail S/o Ghulam Murtaza	Pass	611
622	77.ish.178	Ashfaq Anwar S/o Muhammad Anwar	Fail	Thesis A/90
623	78.il.359	Saleem Ahmad S/o Ghulam Muhammad	Pass	534

Appeared:- 8 Passed:- 7 Pass percentage:- 87.5

Miss. Iram Rashid D/o Muhammad Rashid Chaudry Roll No. 616, Regd.No.82.dph.16, stands first in this examination, securing 650/900 marks.

ASSTT.CONTROLLER (EXAMS.IV).

DEPUTY CONTROLLER (EXAMS.II)

CONTROLLER OF EXAMINATIONS, UNIVERSITY OF THE PUNJAB.

ADMIN OFFICER(EXAMS.II).

Senate Hall, Lahore.

The 4-3-1990.

Prepared by

Checked by Asstt.

UNIVERSITY OF THE PUNJAB

Result Card for the M.Phil(Pharmacy)..... Part-II .....

..... Annual/~~Supplementary~~ Examination, 1989.

Roll No.... 620 ..... Registered No. 81-d/Ph.52...

Name of the candidate ..Hamaad...Ahmad.....

Father's Name..... Shafiq....Ahmad.....

(ERRORS AND OMISSION EXCEPTED)

Candidate mentioned above is hereby informed that he/she has passed in the M.Phil Pharmacy. ~~in~~ the Subject of...Pharmacognosy. Annual/~~Supplementary~~ Examination, 1989.. held in September....1989. Obtaining.....609/900..Marks.

The marks obtained by him/her in the various subjects are given Below:-

Subjects.	Marks obtd.
1 Major-II	134/.200
2 Part-I	343/.500
3 Thesis.	132/.200.
4 /	/...../.....
5	/...../.....
	Grand Total.....609/.900...

Dated. 4.3...../1990.

Asstt. Controller (Exams. IV)
for Controller.

SANDOZ (PAKISTAN) LTD.

INTER OFFICE MEMO

DATE: 10-6-92

FROM: A. Majeed —TO: Mr. Hamaad Ahmed
CTC

SUB: PERMISSION FOR PH.D

Dear Hamaad Ahmad,

Reference your letter dated 3-5-92 regarding permission for doing Ph.D. we are pleased to inform you that you have been granted permission for the above noted course.

Needless to say while doing Ph.D your monitoring of Clinical Trials will not be affected.

Thanks & regards.

A. Majeed

Preston University

United States of America

Know all to whom these letters shall come that the Directors of the University by virtue of the Authority vested in them, have conferred on

Hamaad Ahmad

who has satisfactorily and completely fulfilled all requirements for the studies and the examinations of the University required for the Degree of

Master of Business Administration
in Marketing

with all the Rights, Privileges and Honors pertaining thereto.
Given on this thirteenth day of August 1996.

R. I. Brady
President

P. Stanley
Registrar

REGISTERED NO. M. 302 / L.7646

The Gazette of Pakistan

EXTRAORDINARY
PUBLISHED BY AUTHORITY

ISLAMABAD, SATURDAY, SEPTEMBER 14, 2002

PART II

Statutory Notifications (S. R. O.)

GOVERNMENT OF PAKISTAN

MINISTRY OF HEALTH

NOTIFICATION

Islamabad, the 10th September, 2002

S. R. O. 625 (I)/2002.—In exercise of the powers conferred by sub-section (1) of the Drugs Act, 1976 (XXXI of 1976), the Federal Government is pleased to constitute the Expert Committee on Good Clinical Practices consisting of the following members, namely :—

1. Dr. Farzana Chaudhary — *Chairman*
   Drugs Controller,
   Ministry of Health, Islamabad.
2. Prof. Dr. Mumtaz Hassan, — *Member*
   Chief Executive,
   Mayo Hospital, Lahore.
3. [Prof. Nasimullah, — *Member*
   Chief Executive,
   Holy Family Hospital, Rawalpindi.
4. Prof. Tahir Saeed Hamon, — *Member*
   Prof. of Dermatology,
   King Edward Medical College, Lahore.

Price : Rs. 8.00

[SPS (2002)/Ex. Gaz.]

5. Col. Muzamil Hassan Najmi, *Member*
Assistant Prof. of Pharmacology & Therapeutics
Army Medical College, Rawalpindi.

6. Dr. Faisal Sultan, *Member*
Medical Director,
Shaukat Khanum Memorial Cancer Hospital, Lahore.

7. Dr. Asif Zafar, *Member*
Prof. of Surgery,
Holy Family Hospital, Rawalpindi.

8. Mr. Abdul Latif Shaikh, *Member*
Director, Pharmacy Department,
Agha Khan University Hospital, Karachi.

9. Prof. Dr. Ali Ajwad Shah, *Member*
Prof. of Medicine,
King Edward Medical College, Lahore.

10. Dr. Bashir Ahmad, *Member*
Prof. of Pharmacology Punjab University,
Lahore.

11. Dr. M. Raza Zaidi, *Member*
Medical Director,
Bristol-Myer Squibb, Karachi.

12. Mr. Qasim Iftikhar Ahmed, *Member*
Clinical Research Manager, Pharmacia,
Islamabad.

13. Khurram Zaki Khan, *Member*
Clinical Research Officer,
Ali-Lilly, Karachi.

14. Dr. Humayal Ahmed, *Member*
Clinical Research Officer,
Novartis Pharma, Karachi.

15. Mr. Zaheeruddin M. Babar, *Member*
Assistant Drug Controller (Import & Exports),
Ministry of Health,
Islamabad.

16. Miss. Aisha Khalil, *Member*
Assistant Drugs Controller (Clinical Trials)
Ministry of Health,
Islamabad.

17. Mr. Babar Khan, *Member*
Assistant drugs Controller (Reg. II)
Ministry of Health,
Islamabad.

18. Mr. Najum-us-Saqib, *Member*
Assistant Drugs Controller,
Ministry of Health, Karachi.

2. Miss. Aisha Khalil, Assistant Drugs Controller (Clinical Trials), Ministry of Health, Islamabad shall act as the Secretary of the Committee.

3. A member of the Expert Committee on Good Clinical Practices shall hold the membership in terms of section 10 (2) of the Drugs Act, 1976 (XXXI of 1976).

4. The Committee shall prepare the National Guidelines and strategy for effective implementation of Good Clinical Practices and Good Prescribing Practices.

[No. F. 10-8/2002-I&E.]

DR. FARZANA CHOWDHARY,
Drugs Controller.

PRINTED BY THE MANAGER, PRINTING CORPORATION OF PAKISTAN PRESS, ISLAMABAD
PUBLISHED BY THE MANAGER OF PUBLICATIONS, KARACHI

PROJECTS/ ACHEIVEMENTS

RESEARCH PROJECTS AND PUBLICATIONS:

1. *Conducted 52 x Clinical trials including 3x FDA studies in Pakistan along with their training modules for initiation, monitoring & their conduction.*
2. *Developed the guiding manual for Clinical Research Conduction (WHO Project.*
3. *Developed protocols for Hypertension, Insomnia, Dermatology & Oncology.*
4. *Developed serious adverse events reporting card for Ministry of Health, Govt. of Pakistan.*
5. *Worked as expert for Bio-equivalence center in Pakistan.*

MARKETING PROJECTS:

1. *Developed opinion leaders through Clinical trials of G.C.P Standards of Novartis.*
2. *Developed sales and marketing team with the help of training development.*
3. *Facilitated the registration of new drug molecules in DRAP (Pakistan).*
4. *Constituted and facilitated in High.Q importers to High.Q manufacturers.*
5. *Founded Winilton Pharmaceuticals (PVT.) Ltd, Islamabad.*

EDUCATIONAL PROJECTS:

1. *Founded Yusra Institute of Pharmaceutical Sciences (YIPS), Islamabad by working with Yusra Medical College for establishing Pharmacy Department accredited from Pharmacy Council and affiliated with University of Health Sciences (UHS).*
2. *Conducted several teaching faculty development programs in YIPS.*
3. *Established the animal house for teaching purpose, research projects.*
4. *Established the GMP display center in YIPS.*

ICRO

NOVARTIS

TRAINING WORKSHOP FOR ASIA-PACIFIC REGION

Certificate

This is to certify that

Mr. Hamaad Ahmad

has attended the Clinical MonitorsTraining Course

on

19th to 21st November, 1997 - Singapore

Judith M. Hartle
ICRO Training Manager

Dr. W. Jenkins
Head of CD&RA

NOVARTIS

Human Resources

Pharma (Pakistan) Ltd
6th Floor, Bahria Complex
24 MT Khan Road, PO Box 7247
Karachi 74000, Pakistan

Tel: (92) (21) 5611925-29
Fax (92) (21) 5611921

PH:ED:sg/E-369

Mr. Hamaad Ahmad
Manager Govt. Affairs Clinical
Research
Islamabad

March 1, 2000

Dear Mr. Hamaad Ahmad,

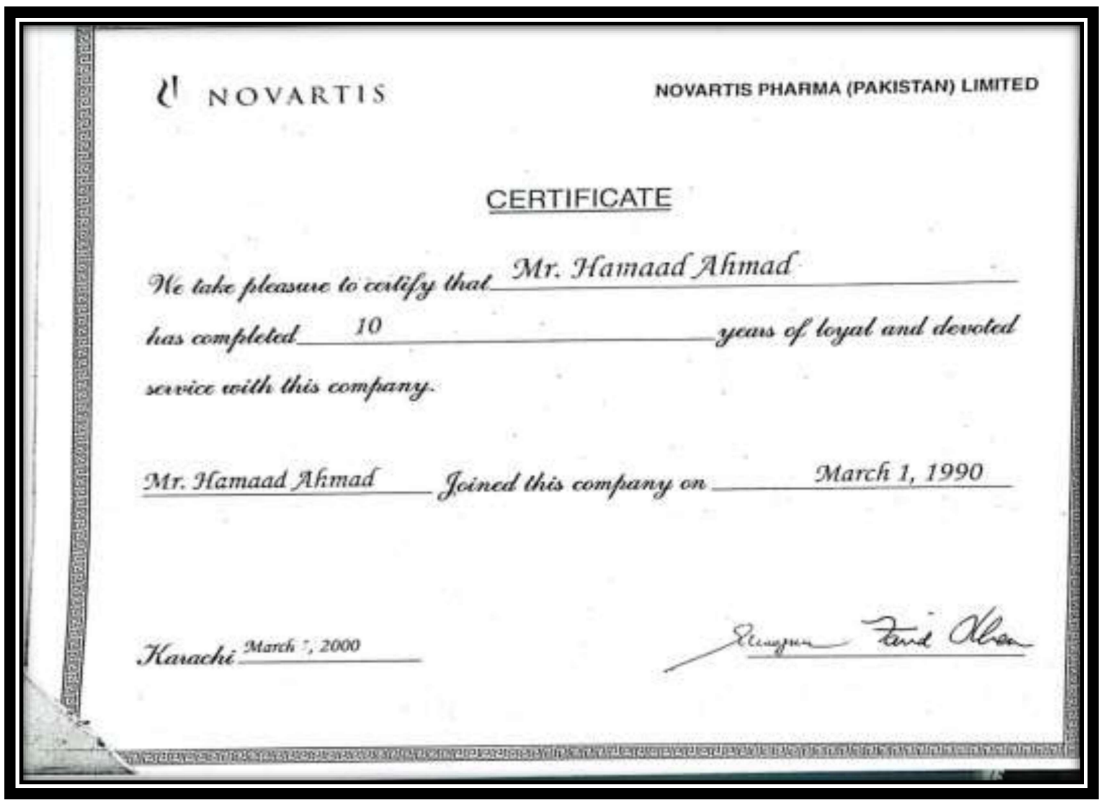
Please accept Management's heartiest congratulations on your completing 10 years devoted and loyal service with this company.

We continue to count on your fine collaboration and remain with kind regards.

Yours faithfully
Novartis Pharma (Pakistan) Limited

Farid Khan
Dr. Farid Khan

E. Durrani
E. Durrani



NOVARTIS

NOVARTIS PHARMA (PAKISTAN) LIMITED

CERTIFICATE

We take pleasure to certify that Mr. Hamaad Ahmad

has completed 10 *years of loyal and devoted service with this company.*

Mr. Hamaad Ahmad *Joined this company on* March 1, 1990

Karachi March 7, 2000

E. Durrani Farid Khan

Certificate

Two Day International Seminar on

Clinical Trials-National Ethical Structure and Good Clinical Practices

Organized by
Ministry of Health, Government of Pakistan

Certified that

Mr./Mrs./Miss. R. AHMAD

has participated in the seminar held on 20-21st August 2008 at Pakistan Institute of Medical Sciences, Islamabad.

Prof. Dr. Rashid Jooma
Director General (Health)

CERTIFICATE

Serial No. 002795

Certificate No. ECS-25-09

PAKISTAN INSTITUTE OF MANAGEMENT

CERTIFICATE OF ACHIEVEMENT

AWARDED TO

Hamaad Ahmad

in token of his/her valued participation in

EFFECTIVE COMMUNICATION SKILLS

Conducted by the Institute

at Lahore from 11-05-1998 to 16-05-1998

PIM

Zarrar Zubair
Director, PIM

CERTIFICATE

OF APPRECIATION

PROUDLY PRESENTED TO

Dr Hamaad Ahmad

Founder of YIPS who by Sacrifice and day & night hard work brought YIPS to No. 1 position in the region.

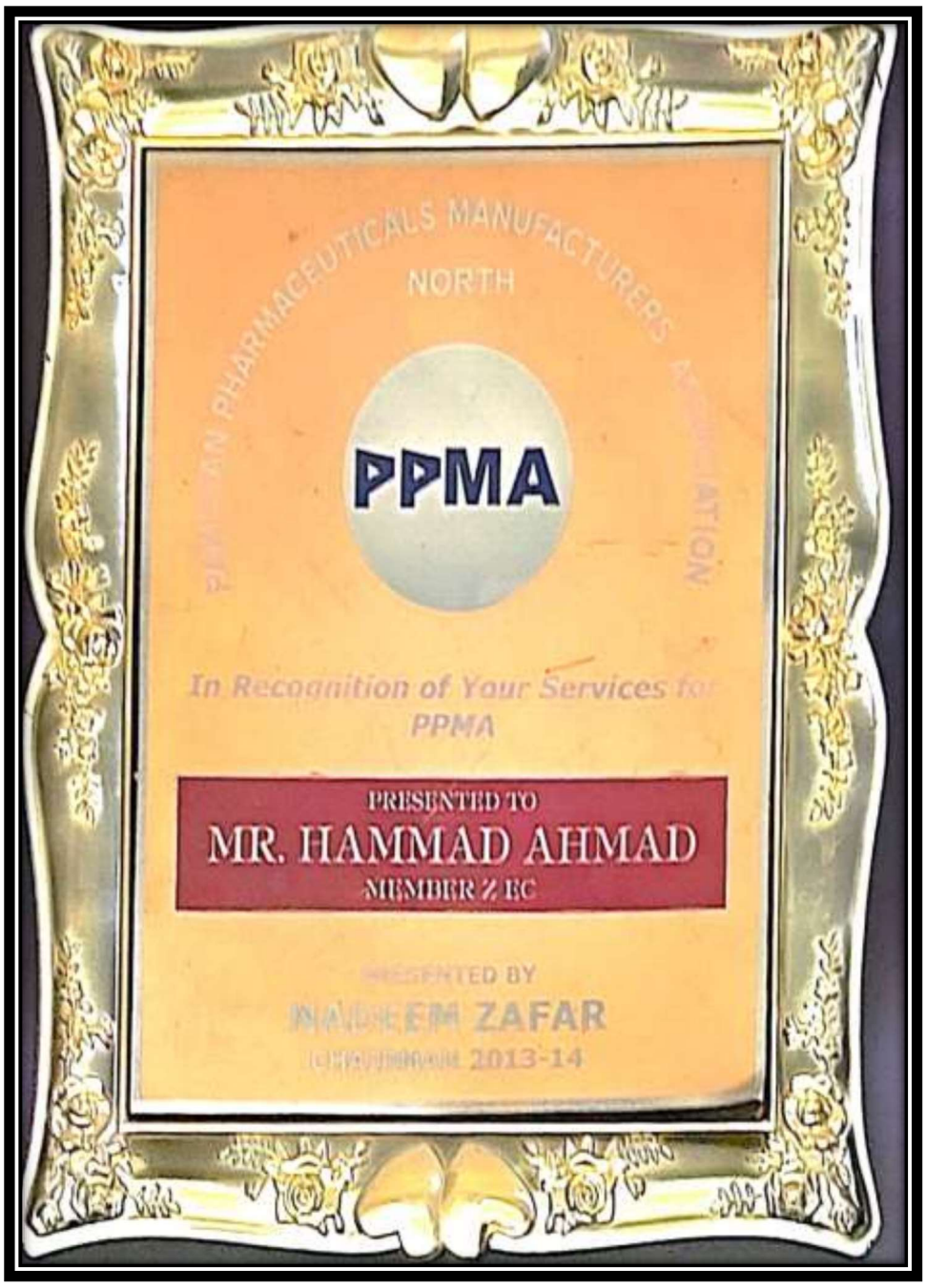
Raised standards of Pharmacy Education with approval & recognition of the regularity authorities.

Brig (R)
Prof Dr M. Sultan Muzaffar
CEO, YIPS

Dr Samar Akhtar
Principal, YIPS

SKILLS & ACTIVITIES

1. Member zonal Executive Committee, Pakistan Pharmaceuticals Manufacturer Association (PPMA).
2. Member Clinical Research Committee, Ministry of Health, Govt of Pakistan, Islamabad.
3. WHO Consultant for Herbal Drugs.
4. Member Bioequivalence Committee, Ministry of Health, Govt of Pakistan, Islamabad.
5. Chief Pattern News Letter of Yusra Institute of Pharmaceutical Sciences (YIPS).
6. Trainer at Yusra Institute of Pharmaceutical Sciences (YIPS).


PAKISTAN PHARMACEUTICALS MANUFACTURERS ASSOCIATION
NORTH
PPMA
In Recognition of Your Services for
PPMA
PRESENTED TO
MR. HAMMAD AHMAD
MEMBER Z EC
PRESENTED BY
NADEEM ZAFAR
2013-14

Sandoz Pharma Ltd. Basle, Switzerland

CLINICAL TRIAL MONITORING COURSE

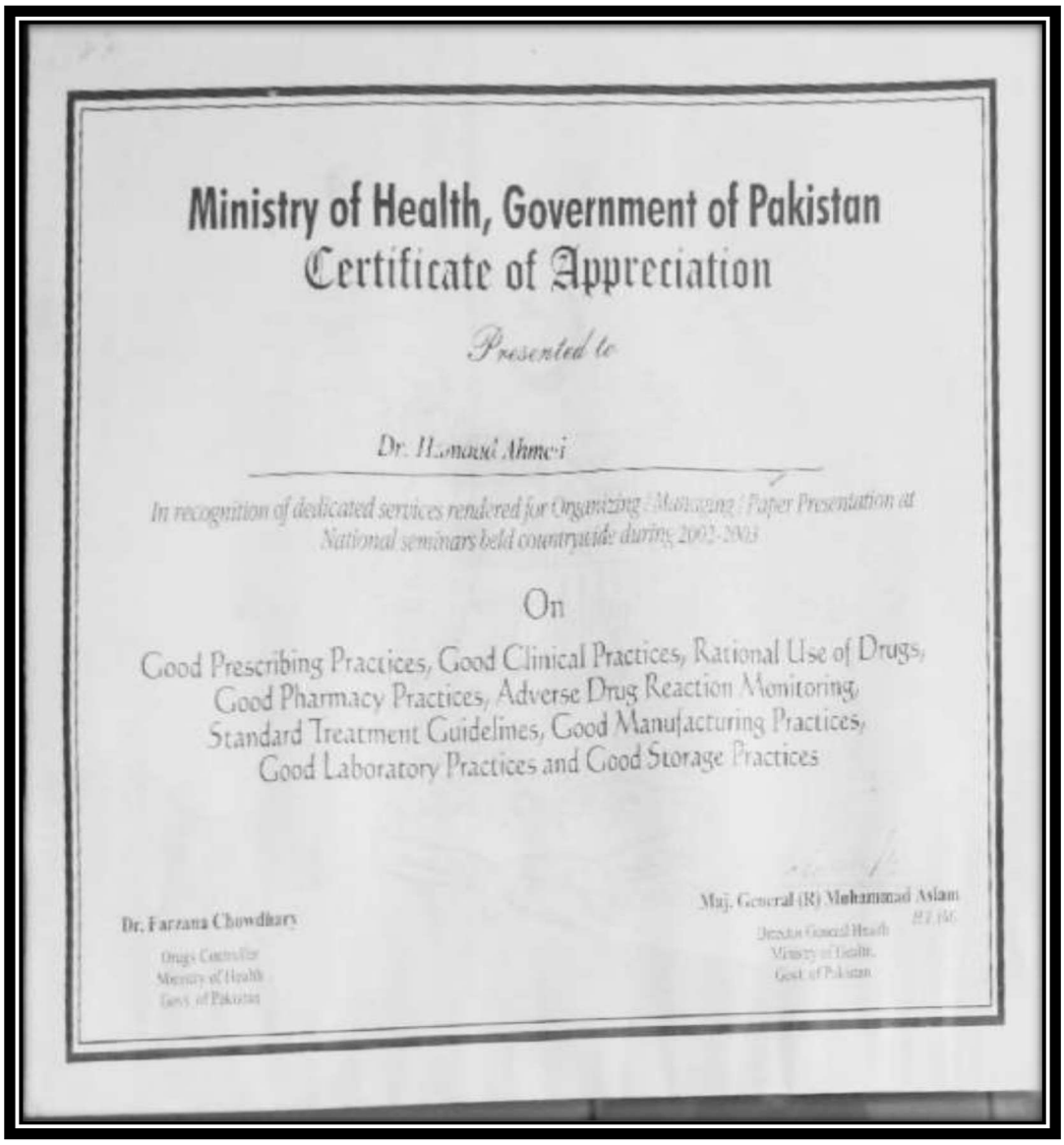
This is to certify that

Hamaad Ahmad

has successfully completed the
Clinical Trial Monitoring Course
February 1992

Head of Clinical Project Management

International GCP Officer



Ministry of Health, Government of Pakistan

Certificate of Appreciation

Presented to

Dr. Humayun Ahmed

In recognition of dedicated services rendered for Organizing / Managing / Paper Presentation at National seminars held countrywide during 2002-2003

On

Good Prescribing Practices, Good Clinical Practices, Rational Use of Drugs, Good Pharmacy Practices, Adverse Drug Reaction Monitoring, Standard Treatment Guidelines, Good Manufacturing Practices, Good Laboratory Practices and Good Storage Practices

Dr. Farzana Chowdhury
Drugs Controller
Ministry of Health
Govt. of Pakistan

Maj. General (R) Muhammad Aslam
Director General Health
Ministry of Health
Govt. of Pakistan

GOP/WHO COLLABORATIVE PROGRAMS
Biennium 2004-2005

REQUEST FORM FOR THE CONSULTANTS

PROJECT:	Traditional Medicine
ACTIVITY CODE:	02.02.01.01.ACS
AREA OF CONSULTANCY:	To develop protocols for clinical trials on traditional medicine.

OBJECTIVES OF CONSULTANCY/ TERMS OF REFERENCE (TOR):

1. Situation analysis of clinical research on traditional medicine in Pakistan.
2. Development of proposals for:

   (a) Good clinical practices in the environment in which the traditional medicine practitioner should work.
   (b) Documentation of empirical findings and scientific clinical research.
   (c) Guidelines for the conduction of clinical trials for the establishment of safety and efficacy of traditional medicine.

EXPECTED OUTCOME:

A manual containing protocol for clinical trials on traditional medicines will be developed.

EXPERIENCE/QUALIFICATION OF REQUIRED CONSULTANT:

1. Should have adequate knowledge of traditional medicines and experience of formulating policies relating to drugs and medicines.
2. Should have adequate experience in pharmaceutical regulation and management.
3. Should have participated well in the National and International forums on traditional medicines.
4. Should be aware of WHO working.

SANDOZ (PAKISTAN) LIMITED

INTER-OFFICE MEMO

DATE: 04-10-1992

FROM: TRAINING & DEVELOPMENT

TO: MR. HAMAAD AHMAD

PC: Mr. M.S. Khan
Mr. S. Haq
Dr. A. Naqvi
Mr. M. Jamaluddin

Interpersonal Managerial Skills

You must be aware that a course on the above is being conducted at Capital Lodge, Murree Road, Islamabad from the 12th to the 15th of October, 1992. You are also requested to attend the said course. The course will start at 0900 hours on the said dates.

You will find enclosed a complete set of the course material. Please go through it before the course and bring it along with you to the course.

Hope to see you.

(ASIF)

*nasim


TRAINING
PRESENTATIONS

Date	Venue	Topic
28-8-2002	N.I.H Islamabad	Good Storage Practice
29-10-2002	Committee Room Ministry of Health	Good Clinical Practice
24-12-2002	Holiday Inn, Islamabad	Good Storage Practice
31-12-2002	Ministry of Health	Good Clinical Practice
21-03-2003	Pearl Continental Hotel Lahore	Good Clinical Practice
24-05-2003	Serena Hotel Quetta	Good Storage practice & its Documentation
11-07-2003	Pearl Continental Hotel Karachi	Good Storage Practice
24-10-2003	J P M C Karachi	Monitoring of Clinical Trials
14-11-2003	Bolan Medical College Quetta	Monitoring of GCP Clinical Trials
02-12-2003	Post graduate Medical Institute, Lahore	Monitoring of Clinical Trials an overview
15-12-2003	Dow Medical College Multan	Good Clinical Practice
22-12-2003	Nishter Medical College Multan	Good Clinical Practice
30-12-2003	P.G.M.I, Peshawar	Monitoring of Clinical Trials
04-09-2004	Hamdard Center Lahore	Good Storage Practice
25-09-2004	Grand Hotel, Peshawar	Good Storage Practice
04-01-2005	Brooks Pharmaceuticals Karachi	Importance Documentation in GSP
30-01-2005	NIH, Islamabad	Good Storage Practice
06-05-2005	PPA House, Lahore	Good Storage Practice
➢ 16-02-2006	PPA Conference, PC Hotel Lahore	Monitoring of Clinical Trials

CERTIFICATE OF FACILITATOR

Dr. Hamaad Ahmad

Three days National Workshop to Train
the Traditional Medicine Practitioners about the conduction of
Clinical Trials to establish the Safety and Efficacy of commonly used
medicinal plants and Integration of Traditional Medicine to Modern Medicines
4 – 6 August, 2007

Organized by
National Institute of Health in collaboration with
Ministry of Health and World Health Organization
Burney Auditorium, National Institute of Health,
Islamabad-Pakistan

Coordinator
WHO's Project on TRM
National Institute of Health
Islamabad

Executive Director
National Institute of Health
Islamabad

ICRO

NOVARTIS

TRAINING WORKSHOP FOR ASIA-PACIFIC REGION

Certificate

This is to certify that

Mr. Hamaad Ahmad

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on

19th to 21st November, 1997 - Singapore

Judith M. Hartle

Judith M. Hartle
ICRO Training Manager

Dr. W. Jenkins
Head of CD&RA


YIPS
Annual Evaluation
Performance Day
23rd Sep 2020
CERTIFICATE OF
Achievement & Honor
Awarded to
Dr. Hamaad Ahmad
Best PCP/UHS Coordinator, Best Organizer, Best Teacher of Faculty Development under the Train the Trainers Program of YIPS, Best Pharmacognosy & Industrial Trainer. Best Head of Human Resource Department of YIPS. Best visionary leader of YIPS.
Dr Hamaad Ahmad
Director, YIPS
Brig (R)
Prof Dr M. Sultan Muzaffar
CEO, YIPS
Dr Samar Akhtar
Principal, YIPS

SCIENTIFIC PUBLICATIONS

a. *Comparative evaluation of Pectin from Citrus Fruits (M.Phil Research work). Pakistan Journal of Scientific Research Vol 43, 1991.*
b. *Isradipine in the management of Mild to Moderate Hypertension – An open label placebo controlled dose titration trial PJC Vol 5 No. 2-3, April to September 1994.*
c. *Efficacy and Safety of fluvastatin in Lowering LDL – Cholesterol in Pakistan Population (Ph.D Research Work) PJC Vol 11 No. 2 & 3, April – September 2003.*
d. *A Multi Centre – Double Blind, Randomized, Parallel Group Trial Comprising the Tolerability and efficacy of Valsartan (80mg OD) Vs Enalapril (10mg OD) in Patients with Mild to Moderate, Uncomplicated Essential Arterial Hypertension Treated for 4 weeks, Followed by Open Label Treatment with CoDiovan in Non Responders in Both Treatment Groups for another 4 weeks (Ph.D Research Work).*
e. *Post Market in-vitro bioequivalence study on Representative local and multinational brands of Azithromycin prescribed in ARI submitted in drug development and industrial pharmacy Overuse of steroids among youth submitted in journal pharmacy practice and research.*
f. *Viability of hemoglobin concentration, RBCs, WBCs, and platelets in blood specimen stored overnight at room temperature submitted in international journal of pathology.*
g. *Synthesis, characterization, pharmacological and toxicological perspectives of metal complexes of piracetam submitted in journal of research in pharmacy.*
h. *Metal complexes of vibavirin Synthesis, characterization and in vitro biological screening submitted in letters in organic chemistry.*
i. *Grohmann, K., Ahmad H&Bothast, R. J. (1991). Pectin-rich residues generated by processing of citrus fruits, apples, and sugar beets: enzymatic hydrolysis and biological conversion to value-added products. ACS Publications*
j. *Maharaj, B., Khedun, S. M., Moodley, J., Hammad A, Madhanpall, N., & van der Byl, K. (1994). Intravenous isradipine in the management of severe hypertension in pregnant and nonpregnant patients: a pilot study. American journal of hypertension, 7(7_Pt_2), 61S-63S.*
k. *Serruys, P. W., de Feyter, P., Macaya, C., Hammad, A, Kokott, N.,*

Puel, J., Vrolix, M., ...& Meier, B. (2002). Fluvastatin for prevention of cardiac events following successful first percutaneous coronary intervention: a randomized controlled trial. Jama, 287(24), 3215-3222.

l. *Fogari, R., Hammad, A., Mugellini, A., Zoppi, A., Marasi, G., Pasotti, C., Poletti, L., ...&Preti, P. (2004). Effects of valsartan compared with enalapril on blood pressure and cognitive function in elderly at*

m. *Iqbal, Z., Khan, M. I., Khan, A., Khan, A., Shah, Y., &Ahmad, H. (2011). Bioequivalence of 2 azithromycin capsule formulations: a randomized, single-dose, open-label in healthy male volunteers. Current Therapeutic Research, 72(3), 95-108.*

n. *Zafar, Rehman, Wajeeha Waseem, Samar Akhtar, Hammad Ahmad, Hashaam Akhtar, and Rabia Gul. "Weight Lifters Maltreatment of Anabolic Steroids in Twin Cities of Pakistan." RADS Journal of Pharmacy and Pharmaceutical Sciences 6, no. 4 (2018): 217-222.*

o. *Masud, K., Kamran, H., Kamran, M., Akhtar, S., Ahmad, H., & Gul, R. (2018). Viability of Hemoglobin Concentration, Red Blood Cells, White Blood Cells and Platelets Counts in Blood Specimens Stored Overnight at Room*

2. *Temperature. International Journal of Pathology, 33-36.*

a. *Zafar, Rehman; Waseem, Wajeeha ; Akhtar, Samar; Ahmad, Hamaad; Akhtar, Hashaam; Gul, Rabia, Shahid, Khadija(2018). Synthesis, characterization and biological evaluation of new sulfonyl hydrazide derivative and its organotin (IV) complexes" Journal of Pharmacy Practice and Research.*

b. *S Akhtar, H Ahmad, H Akhtar, Synthesis, Characterization, pharmacological and toxicological perspective of metal complexes of Piracetam (2018). Journal of research in pharmacy.*

c. *Akhtar, S., Ahmad, H., Akhtar, H., Zafar, R., Waseem, W., & Sherwani, M. K. (2019). Protein Kinase Inhibitory Potential and Anti-Fungal,RADS Journal of Pharmacy and Pharmaceutical Sciences, 7(1), 9-15.*

d. *Samra Bashir1 iiii , Arif-ullah Khan2, Maryam Mahmood2, Mateen Abbas1, Samar Akhtar3, Abdul Waheed Khan4, Muhammad Tahir Aqeel5, Muhammad Akhlaq6 & Hamaad Ahmad3. Students' perception of the learning environment in private-sector pharmacy institutes of Pakistan. Pharmacy Education (2020) 20(1)191- 197.*

OPEN ACCESS

ORIGINAL ARTICLE

Protein Kinase Inhibitory Potential and Anti-Fungal Activities of Metal Complexes of Anti-Viral Drug Ribavirin

Samar Akhtar[1], Hammad Ahmad[1], Hashaam Akhtar[1], Rehman Zafar[1,], Wajeeha Waseem[2], Maryam Khan Sherwani[1]*

[1] *Yusra Institute of Pharmaceutical Sciences, Yusra Medical and Dental College, Zaraj Housing Society, Opposite DHA Phase 2 Gate III, Main G.T. Road, Islamabad, 44000, Pakistan*

[2] *Riphah Institute of Pharmaceutical Sciences, G-7/4, Islamabad, 44000, Pakistan*

Author's Contribution

All the authors contributed significantly to the research that resulted in the submitted manuscript

Acknowledgement

We highly acknowledge support of HEC for conduction of this research work.

Article info.

Received: November 18, 2018

Accepted: April 25, 2019

Funding Source: *Nil*

Conflict of Interest: *Nil*

Cite this article: *Akhtar S, Ahmad H, Akhtar H, Zafar R, Waseem W, Sherwani MK. Protein Kinase Inhibitory Potential and Anti-Fungal Activities of Metal Complexes of Anti-Viral Drug Ribavirin. RADS J. Pharm. Pharm. Sci. 2019; 7(1): 1-7.*

***Address of Correspondence Author:** *rehmanzafar015@gmail.com*

ABSTRACT

Background: Ribavirin, a known antiviral drug, potentially recognised for a number of pathological conditions like hepatitis C, Lassa fever and Hanta virus infection. It predominantly works by inhibiting viral RNA synthesis that in turn stop viral multiplication. The best prosperous derivative of this drug is Taribavirin (3-carboxamidine derivative).

Objective: In this research, we aim to synthesize the metal complexes of already marketed drug ribavirin, because the complexation of such approved marketed drug will save time and currency that may spend in relation to clinical development of new drug molecule.

Method: Eleven derivatives (S-01-S-11) of ribavirin were synthesized in combination with di/tri organotin, Zn, Cu and Fe. Characterization was done through IR and H^1 NMR spectrophotometer and these compounds were analysed for *in vitro* biological activities including anti-microbial, anti-fungal and protein kinase inhibition assay.

Results: Research revealed that addition of trace metals to approved marketed drug have enhanced the biological properties of unbound drug.

Conclusion: Outcomes of this research clearly indicates the enhancement of biological activities of free drug through immersion of metals which could be further analysed for toxicity studies.

Keywords: Ribavirin, trace metals, protein kinase inhibition.

INTRODUCTION

Circumstantial

Ribavirin proves to be imminent antiviral product in pharmaceutical industry [1]. It is potentially prescribed in contradiction of many viral species including Congo virus [2-5]. Hepatitis C, other viral infections and HIV management can be done with its interference to interferon [6, 7]. Research has shown that ribavirin can be used to treat rabies when combined with other drugs [8]. They have freshly been identified for their events in contradiction of severe viral infections [9, 10].

In 1970, ribavirin was recognized and further in 1972 described to have antiviral potential [11]. It works by obstruction with duplication of the viral hereditary material as it takes after structure squares of RNA particle. Fundamentally ribavirin consist of a ribose sugar with purine like nitrogenous base. Its component of activity is as yet not surely knew [12]. Organometallic compounds was utilized from the beginning of time to treat numerous sorts of sickness including bacterial, contagious, viral, leishmanial diseases and different issue [13]. The field of organometallic therapeutic science picked up its blast later revelation of anti-cancer medication cisplastin. They proved to have ability of having anti-tumour and anti-microbial operators [14]. Further tin ethyl eticpurpurin were accounted for to be utilized for restoring growth related macular deterioration [15].

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Iron, copper and zinc are basic follow reserves needed to perform typical working of our body. Deficiency of the over 3 elements in a person prompts bizarre development, diminished in susceptibility, and particularly life becomes hard to vision without iron because it has the capacity to deliver O_2 to all cells [16]. Other metals have their own importance in normal working of body [17, 18].

Meanwhile hundreds of years, antimony was utilized to treat dermal diseases. During the 20th century, metals mixes stayed utilized for leishmaniasis as 1st strategy treatment [19, 20].

METHODOLOGY

Substantial

Chemicals with the various synthetic mixtures that involves metal salts were purchased then used moving forward deprived of any more change.

Method

Medication ribavirin was taken from local pharmaceutical manufacturer. Brisk fitting china stood utilized with dissolving focuses were verified to have Gallen light device. IR spectrophotometer was utilized to describe functional groups. Combination then hostile to bacterial inhibition activity was done in research lab of Riphah University Pharmacy Department. The complexation of metals with free drug ribavirin was carried in the way as shown in Figure 1.

Common Way for Combination of Compounds 1-6 (S01-S06)

Ribavirin and di/tri organotin stayed blended according to the previously reported procedure [21]. With triethylamine Et_3N (1 mmol) ribavirin (2 mmol) was gone to reflux condenser for 3 hours, with steady blending in dry toluene. It remained permitted for chilling and 2 mmol of organotin which was included after reflux and the blend was allowed to mix for 360 min. At that point, result precious stones of Et_3NHCl_2 were sifted off and the organotin edifices were filtered from the remainder by means of dissipation [22].

Compound 7 Zinc Derivative (S-07)

Zinc chloride, ribavirin and methanol in their respective quantities was added and refluxed for 3 hours. They were blended through consistent mixing with warmed and afterward chilled off. In the wake of cooling, they were elucidated by vaporization of product after filtration and washed with chloroform and methanol [23].

Compound 8 Copper Derivative (S-08)

Marketed drug and Cu(II) acetic acid were broken down in 15 ml methanol independently afterward combined. The environment was kept up at pH 7. Mixture was stirred at 37°C for 240 min. What's more, cooling down medium-term. At that point item was filtered and sprinkled with addition of methanol and vacuum dried [24].

Compound 9 Iron Derivative (S-09)

$FeCl_3$ (1 mmol) with methanol and 1 mmol of ribavirin were mixed. Then they were allowed to reflux on oil bath for 3 hours to avoid direct heating of compounds [25]. In wake of cooling the arrangement was illuminated and coming about nastens were methanol mixed and got dehydrated out with gel as shown in Figure 1.

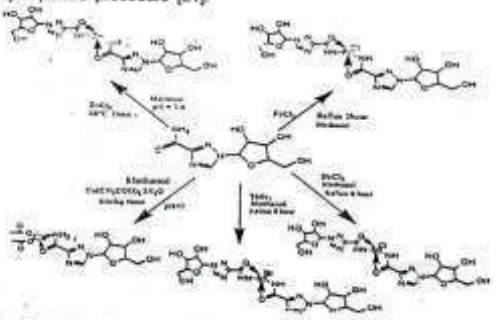

Figure 1. Showing synthesis Ribavirin with trace metal.

Compound 10-11 Organotin Derivative (S10-S11)

1 mmol of 25 ml of dry methanol ribavirin arrangement was broken down gradually with consistent mixing to naturally arranged arrangement of antimony halide (1 mmol) at 37°C in 10 ml methanol with reflux for 3 hours. At that point, subsequent collection was placed in murkiness. The item remained gotten as hastens afterward percolation. This accelerates stood clear with ethanol with purged by recrystallization strategy [26].

Anti-Microbial Activity

Anti-bacterial examine of coordinated mixers against the bacterial stains and the paternal sedate were done of microscopic organisms utilizing dispersion strategy [27, 28]. Supplement nutrient agar remained utilized. The microbial species comprised of *S. aureus* and *E. coli*. DMSO and third generation cephalosporin's 20 µg/plate were utilized as a negative control and positive control separately. The results were analysed as triplicate and their arithmetic mean was considered.

Anti-Fungal Assay

Ribavirin and integrated edifices got analysed for 6 irresistible strains of growths to be specific Mucor sp., *A. flavous*, *A. fumigatus*, *A. niger*, and *S. fusarium*. DMSO was taken as deleterious control and Terbinafine was taken as optimistic control. Cylinder dissemination strategy [29, 30] followed utilizing dextrose agar. Readings were taken as triplicate.

% restraint potential = 100 – (Lined development in test/Lined development of control) x 100

Enzyme Peptide Kinase Inhibitory Potential Assay

Chemicals particularly protein kinases undergoes ascended in critical lethal concentrations as threatening development treatment as protein phosphorylation lessens by catalysts which had turned out to be one of the primary authoritative frameworks in natural strategies including cell death, cell increase along with assimilation. Peptide kinase activity was performed on all compounds. Experimental 2 zones of inhibition were a straightforward limiting zone speaking to toxicity of cells with an uncovered restraint zone indicating positive peptide hindrance capability all the synthesized compounds, 9 mm of hindrance zone was dynamic considered.

RESULTS AND DISCUSSION

The complexation of marketed drug ribavirin with metals was done in a streamline manner. The products were obtained in handsome amount. Review of IR spectrum uncovered trademark possibilities of natural surface of the edifices that enabled us for confirmation of their binding complexes. Recurrence about 3299-3199 cm^{-1} might be described as v(N-H) that is available in allowed medication however missing through metal buildings. Among all edifices, metal coordination was supported with moving of v(C-N) and v(C-O) which relates to non-bounded medication inside spectrum of IR. Buildings displaying presence v(M-N) *i.e.* metal nitrogen in scope of 449-559 cm^{-1}. The tin edifices demonstrated very weak and width groups allotted to v(Sn-O) at district of 399-489 cm^{-1} each cm supporting Sn-O security arrangement. Auxiliary explanation of edifices were finished with ^{1}H and ^{13}C atomic attractive reverberation spectrum. It was critical move of signs in ^{1}H NMR of edifices and unbound medication ribavirin. Chelation of ribavirin with metal particles brought about lower filed moves of sugar proton flags, because of bringing down negative ion on hydrogen iota. In ^{13}C NM resonance, distinction along with concoction diversion were peaceful striking of carbon particles that are nearness to mind boggling focus that is agreeable to intricate arrangement. Spectroscopic information demonstrates effectiveness biand of edifices.

Anti-Microbial Activity

Organic exercises of elements mixes remained confirmed in contradiction of accessible species of microorganisms with their growths. Unbound medication ribavirin that additionally tried however demonstrated for all intents and purposes no action in double tries yet the integrated buildings indicated amazing results when tested on bacterial species. Microbe against activity consequences just tin based compounds buildings remained calculable. Calculations for anti-microbial and anti-fungal activity are given in Table 1, Table 2 and graphically displayed in Figure 2, Figure 3, respectively [31, 32].

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Table 1. Synthesized compounds anti-microbial activity.

Compounds	Inhibitory Region (2)	
	S. aureus	*E. coli*
S	000	000
S-01	010	008
S-02	000	008
S-03	000	010
S-04	013	012
S-05	011	013
S-06	000	011
S-07	015	014
S-08	006	000
S-09	015	014
S-10	015	016
S-11	000	008
Cephalosporin	021	022
Dimethylsulfoxide	000	000

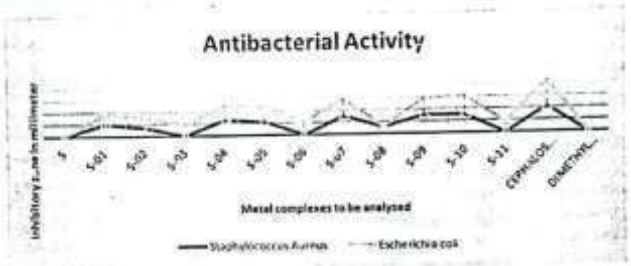

Figure 2. Anti-bacterial activity.

Table 2. Synthesized compounds activity against fungus.

S. No.	Compounds	Inhibitory Area (2)				
		A. flavous	*A. niger*	*F. solani*	*A. fumigatus*	Mucor sp.
1	S	0	0	0	0	0
2	S-01	14	17	13	16	18
3	S-02	18	17	14	15	16
4	S-03	0	0	0	0	0
5	S-04	0	8	0	0	0
6	S-05	28	25	18	29	18
7	S-06	28	0	0	0	0
8	S-07	11	10	14	13	12
9	S-08	0	0	0	0	0
10	S-09	0	0	0	0	0
11	S-10	0	0	0	0	0
12	S-11	0	0	0	0	0
13	Terbinafine	15	32	34	30	32
14	DMSO	0	0	0	0	0

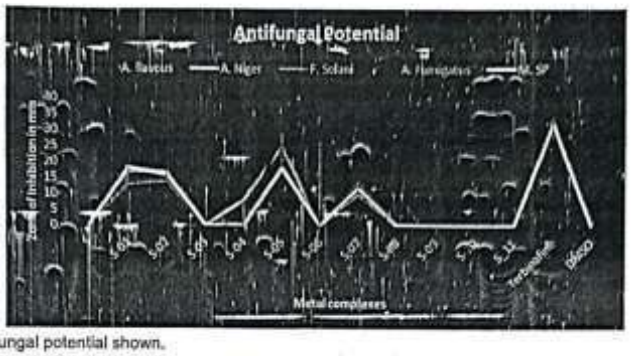

Figure 3. Anti-fungal potential shown.

Table 3. Inhibition of protein kinase results.

S. No.	Compounds	Inhibitory Calculated (2) Conc.	
		Transparent Area (2)	Colour Area (2)
1	S	00	00
2	S-01	02	27
3	S-02	03	22
4	S-03	00	10
5	S-04	00	25
6	S-05	00	25
7	S-06	00	18
8	S-07	00	07
9	S-08	00	09
10	S-09	00	00
11	S-10	00	00
12	S-11	00	00

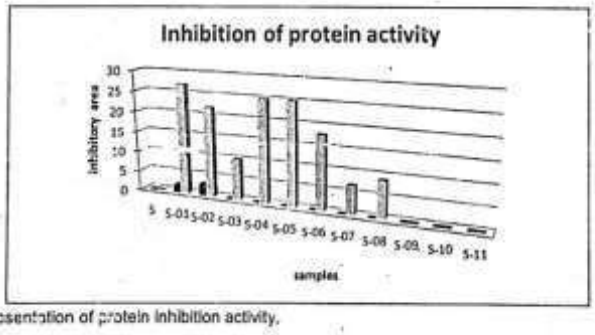

Figure 4. Representation of protein inhibition activity.

Inhibition of Protein Kinase

Anti-viral drug along with integrated buildings were examined for peptide restraint test. Character 6 shows graphical portrayal of protein kinase measure of ribavirin and its buildings. The drug and its integrated element buildings demonstrated extremely encouraging outcomes. Test S-1 indicated most noteworthy zone of hindrance pursued by S-04, S-05, S-06, S-08, S-07 and S-03 individually. While samples S 09-11 demonstrated not at all unmistakable area of restraint by any stretch of the imagination. Calculated values for protein kinase inhibitory potential are given in Table 3. These calculations are drawn graphically in Figure 4.

CONCLUSION

The trial information exhibited in this paper gives proof of effective development of normally dynamic organotin, Zn(II), Cu(II), Sb(III) and Fe(III) ribavirin edifices. The examination uncovered that the metal complexation has influenced and upgraded the natural impacts of the free medication. Further examinations to divulge other pharmacological properties of the integrated edifices are expected to investigate in future research.

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Viability of Hemoglobin Concentration, Red Blood Cells, White Blood Cells and Platelets Counts in Blood Specimens Stored Overnight at Room Temperature

Kamran Masud*, Harris Kamran**, Maryam Kamran***, Samar Akhtar****, Hamaad Ahmad****and Rabia Gul****

*Department of Pathology, Yusra Medical and Dental College, Islamabad, ** Private medical clinics***Department of Health, Punjab Government, ****Yusra Institute of Pharmaceutical Sciences, Islamabad

Abstract:

Introduction: Delayed analysis in pathology laboratories is a common problem because of large number of samples to be tested every day. But this delay causes sample aging and affects directly diagnostic test results. Complete blood picture is most widely done test in laboratory analysis provides basic information regarding diagnosis as well as monitoring of patient's health. So, accuracy of such diagnostic test is very important to assure correct diagnosis that leads to right therapy.

Objective: The aim of current research work is to evaluate the viability of blood specimen for complete blood count at different time intervals at room temperature.

Patients and Methods: For this purpose, 128 samples were collected during routine laboratory work at the different time of the year. Collected samples were analyzed at the time of collection and after 24 hours. Parameters studied includes hemoglobin concentration, RBC counts, WBC counts and Platelets counts. Results were analyzed by using student T-test.

Results: Parameters Hemoglobin concentration, RBC, and WBC remain stable over 24 hours at room temperature as there was no statistically significant difference between fresh and delayed sample. However, Platelets values differed significantly ($p<0.05$) and indicate that this parameter needs special storage in case of delayed analysis.

Conclusion: Thus, it is concluded that forPlatelet counts sample requires special storage conditions to assure reliable results. While only hemoglobin concentration, RBC and WBC counts can be accurately measured even after 24 hours at room temperature.

Keywords: Blood Complete Picture (CP), Diagnosis, Pathological test, RBCs, Stability, Viability, WBCs, Platelet

Introduction

Diagnostic tests are key factors in the determination of patient's pathological condition. Rationale therapy is directly related with correct diagnosis. So, it is very important to assure the precision of these tests[1]. The first step in diagnostic test is sample collection. Guidelines for handling and storage of collected sample describes accurate methods and precautions. International committee of hematology standardization (ICSH), recommends that the blood count sample for CBC remains viable up to 6 hours at 18-22°C and 24 hours at 2-6°C[2]. Stability of collected sample govern the reliability of the results.

In daily routine, there are a large number of samples to be tested in pathology laboratories. Usually, all samples are not tested on the day of collection. But not all parameters under study remains same at the different time. Stability of blood sample is very crucial. Handling and storage of blood specimen govern the reliability of the results of CP. Delayed analysis affects the actual result that directly influence the diagnosis and the therapy[3].

Climate of Pakistan is arid and vary from cold in January to hottest in June. In such climatic situation, maintenance of controlled room temperature i.e. 25°C is very important. Sample handling and stability in such fluctuation of temperature is crucial. Temperature and humidity also affects the reliability of the results[4]. To assure the effectiveness of particular

AUTHOR'S CORRESPONDENCE:
DR. KAMRAN MASUD
Associate Professor, Department of Pathology
Yusra Medical and Dental College, Islamabad
E-mail:rabia_rabail@yahoo.com

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method, pre-analytical preparation plays pivotal role. If sample deteriorate before analysis then test gives false results. Pre-analytical analysis includes sample collection, handling and storage. Majority of error occurs because of improper handling and storage conditions. So, pre-analytical guidelines need to be monitored properly [3]. This research work is designed to assess the effect of delayed analysis of blood specimen. There are few studies conducted to determine the reliability of collected blood samples in Pakistan. This research work provides guideline for preanalytical sample analysis. The study result is useful for peripheral pathology laboratories where maintenance of low temperature in the laboratories and transmission of specimens for different reasons is dependent on numerous variables beyond the control of the laboratory setup.

Patient and Method

In the present study, viability of white blood cells, red blood cells, hemoglobin concentration and platelets were analyzed for 24 hours at controlled room temperature during different time of the year. We analyzed sample at different time period of the year to assess the temperature effect on CP sample at room temperature (25-28°C). For this purpose, cross-sectional descriptive study was designed. Data was collected prospectively by directly taking sample from available patients at pathology laboratory. Sampling method is convenient and patients were selected randomly. Sample size is based on availability of number of patients at our laboratory.

128 Blood samples were collected during routine work at peripheral pathology laboratory in Attock Rawalpindi, Pakistan. Samples were collected in dipotassium EDTA-anticoagulant containing tubes. Collected sample was tested immediately and results were recorded. Then samples were kept at room temperature for 24 hours and after 24 hours again tested by automated blood cell counter. The difference between fresh and 24 hours delayed sample were compared. Data were analyzed by MS-Excel 2017 and results were statistically evaluated by student T-test.

Result

Our results showed that there is no significant difference between the fresh sample and 24hours stored sample of hemoglobin at room temperature as depicted in figure 1 ($p>0.05$). Red blood cells and white blood cells remain stable over 24hours at room temperature as shown in Table-1 ($p>0.05$).

Table 1: Results of stability of blood sample

Blood specimen: Fresh and after 24 hours sample analysis report												
	Hemoglobin			RBCs			WBCs			PLTs		
	fresh	after 24 hrs	diff	fresh	after 24 hrs	diff	fresh	after 24 hrs	diff	fresh	after 24hrs	diff
Average of 128 samples	13.02	12.14	1.19	7.25	7.20	0.55	7.67	7.65	0.23	321.57	289.40	66.71

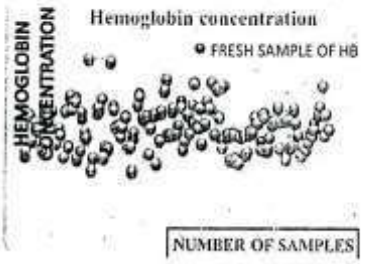

Figure 1: Result of hemoglobin concentration of the fresh and delayed analysis

Platelets did not remain constant as result of fresh and 24 hours stored sample vary significantly (figure 2).

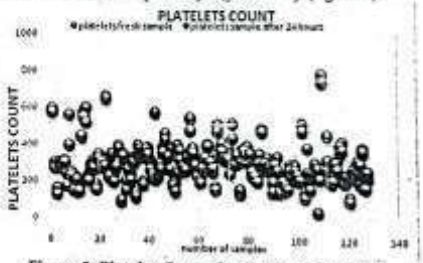

Figure 2: Platelet Count for fresh and delayed sample

Colour page

This indicated blood sample for cellular count can be performed after 24 hours but complete blood count involving platelets count need special storage condition if the sample cannot be tested immediately. Sample aging greatly affects platelets among CP parameters tested in this study.

Discussion

Pathological tests are the basic requirement to ensure rationale for therapy. Right diagnosis is the preliminary step towards the selection of right therapy. If this preliminary step is neglected then all the steps in deciding therapeutic regimen affect directly. So, to assure rational therapy rigorous control of diagnostic test is mandatory. Standardization of laboratory parameters is a key requirement to minimize error in the diagnostic test. This includes calibrated equipment's, validated methods for analysis control of storage conditions among which temperature is crucial[5].

Handling of blood specimen in routine laboratory work is not rare. Blood samples require more careful handling to remain viable. Blood Complete Picture (CP) involves exact counting of red blood cells, white blood cells, Platelets and hemoglobin concentration. These parameters are altered by temperature duration and storage. Particularly platelets result was greatly influenced by time of analysis after collection of the sample. In another study, CP parameters were studied at the different time and results revealed that sample remains stable over 6 hours after collection of the specimen at room temperature while 48hours.[6]CP parameters greatly affected by the aging of the sample at room temperature after 24 hours to 48 hours [7].

In Pakistan, there is need of such research projects to assure the quality of laboratory practices. Data of this study provides a baseline for the pathological laboratories to maintain storage condition for delayed analysis. Meanwhile to assure the reliability of diagnostic test standard guidelines must be monitored. Such research work promotes the implementation of standard operating procedures and guidelines,particularly for peripheral pathology laboratories. Thus, for the precise and accurate results, all pathological laboratories need to minimize pre-analytical errors by strictly employing good laboratory practices.

Conclusion

It is concluded that Platelet count in blood specimen does not remain stable at room temperature over 24 hours. However, hemoglobin concentration, RBCs and WBCs count can be tested accurately after 24 hours as these parameters remain stable at room temperature.

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Author	CONTRIBUTION
Kamran Masud	A,B,C
Harris Kamran	A,B,C
Maryam Kamran	A,B,C

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ORIGINAL ARTICLE

Weight Lifters Maltreatment of Anabolic Steroids in Twin Cities of Pakistan

Rehman Zafar[1,*], Wajeeha Waseem[2], Samar Akhtar[1], Hammad Ahmad[1], Hashaam Akhtar[1], Rabia Gul[1]

[1] Yusra Institute of Pharmaceutical Sciences, Islamabad, Pakistan

[2] Riphah Institute of Pharmaceutical Sciences, G-7/4, Islamabad, Pakistan

Authors' Contributions
1 Conception & Study Design, Data Collection, Data Analysis, Drafting.
2 Data Analysis, Drafting.
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***Address of Correspondence Author:**
rehmanzafar016@gmail.com

ABSTRACT

Objective: This manuscript gives data about the use of steroids to build the body of youthful weight lifters. Steroidal use isn't just restricted to working out and weight lifting yet it has turned out to be a standout amongst the most risky fixation in our younger generation.

Methods: The observational investigation was evaluated in various gyms and wellness focus in Rawalpindi. The determined example measure was 210 muscle heads. The information had been examined in SPSS 18.

Results: 46.6% of the aggregate weight lifters were utilizing steroids and various people were taking it through parenteral course that prompts number of risky impacts including barrenness. Results can be grouped into three classes. One class knew about reactions, other was unconscious of symptoms and the third classification has a place with the individuals who had no worry with dangerous impacts.

Conclusion: The study uncovers that the usage of anabolic steroids is extremely normal in Pakistan. Its utilization ought to be defend and mindfulness sessions must be done to get the general population aware of reactions.

Keywords: Anabolic steroids, bodybuilder's, parenteral course, barrenness.

INTRODUCTION

Medication misuse implies the substance which can be utilized rather than endorsed securily astute by Regulatory expert. Numerous canapés, CNS stimulants and weight reduction specialists are being utilized as medication misuse. In our general public, Medicines are utilized without solution because of simple access to every one of those operators which can create delight, satisfaction and vitality to our body. The correct reason for such maltreatment is as yet not clear, with the speculations including: the hereditary indication, or a propensity which if an individual moves toward becoming junkie to drugs sees as the ceaseless infection [1].

There are various medications which are inclined to sedate maltreatment including the barbiturates, benzodiazepines, cocaine's, champions, morphine and so forth. In the majority of the criminal cases, the guilty parties are dependably in some kind of medication misuse [2]. Medication mistreatment has various disservices including the physical, social and mental yet notwithstanding this, the expansion in the criminal demonstrations are additionally one of the fundamental impediment of medication ill use [3]. The event of medication maltreatment in competitor's particularly muscle heads opens far for the analysts to discover the certainties for the utilization of medications in competitors [4].

Steroids Background

Since Antiquated events, it was not understood that why the headway changes happen in guys with time, however then it was realized that gonads were engaged with organic and enhancement changes of folks [2].

More studies started to happen from 1929 to 1935, when a new compound called testosterone starting

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Presently, from 2000 to 2004, relatively 2.5% to 3.4% of the considerable number of surveyors were observed to be associated with dealing use of steroids [11] progressing reverberation of the hormonal use shows the innumerable weightlifters are up 'til now using the anabolic steroids and there is zero chance to get of ending such use especially in amusements [6]. After over all establishment we infer that the authentic scenery of medications is somewhat which is interminable. That is reliably occurring and past is being formed each time and reliably through the specialist, specialists and officials.

Steroidal Circumstantial in Pakistan

UNODC report in 2013 showed that in Pakistan 6% of aggregate populace had engaged with usage of controlled substances in which 3.6 % of total people used cannabis. Multi cure is furthermore standard with the extent of one of each five uncovering more than one substance. In KPK, seventy three percent of the social orders represented sharing syringes and only one percent of the total people acknowledges that mixes drugs had access to sans germ needles. Just about four million of the drug customers in Pakistan total people were seen as dependent on materials and among these poor customers women were less who have gotten taking care of than folks [4].

On account of the unlimited usage of medications in KPK and Northern territories, tranquilizers dependence have made that demonstrates the all-encompassing pull managing and moreover thought to the disarranges of prescriptions. The most amazing use of meds is most extensive in KPK in which very nearly 10% of the total masses were associated with use and resemblance thereof of drugs [10].

MATERIALS AND METHODS

Investigation was carried out in distinctive rec centers and wellness focus in Twin cities somewhere adolescents generally emanated to expand their physique. The objective populace involved muscle heads particularly more youthful age going to the exercise centers and wellness focuses. The gyms were chosen by non-likelihood comfort examining method. The rec centers whose proprietors did not enable us to get the poll filled by their jocks were prohibited. Test was chosen from the Gym A, Gym B and Gym C, situated in the populated region of Twin urban communities. Test size of 210 from every rec center male muscle heads among the era gathering 12-30 ages going to rec centers routinely and ready toward partake stayed chosen via non-likelihood comfort inspecting strategy (Table 1). The example estimate was determined by WHO test measure Calculator. The determined example measure was 210 muscle heads with a normal information and consciousness of steroids. The pre-tried organized poll was self-directed; reaction rate was exceptionally promising of 96% guaranteed. This organized survey incorporates members' social and statistic attributes and their budgetary foundation, different factors like purpose behind beginning lifting weights, duration consumed in the rec center, details and length for utilizing drugs, impression of functional impacts of chemicals and recognition of complexities related with steroid use. The information was investigated in statistical software. Test was utilized to discover the relationship between subjective factors. 0.05 probability value was viewed as huge [12].

Table 1. Sample assembled from fitness centers showed in tabular form.

Fitness center A	Fitness center B	Fitness center C
210	210	210

RESULTS

After the survey which was finished with respect to the utilization of anabolic steroids in those of 210 guys, 98 i.e. almost 46 percent were accounted to historical or current client of Anabolic Steroids. Further when they were investigated about the route of taking steroids, it was mind blowing that eighty three percent of users were utilizing parenteral route. At the point when their dimension of mindfulness was checked with respect to the utilization of drugs that whether it was thought to be lawful or unlawful? Stunning report observed that 53.4% of the people in Gym A knew about the way that it was illicit. 51.2% in the Gym B trust that it was unlawful and 125 of people in the fitness center C trust it ought prohibited to utilize because of its forbiddance.

Eighty eight, ninety and sixty three people from aggregate of 210 in the Exercise room A, Exercise room B and Exercise room C separately were not aware of information in regards to the symptoms of

steroids. 10, 12 and 22 people in the Gym A, Gym B and Gym C correspondingly don't have any worry with the symptoms. They simply need to build their weight using any and all means just to accomplish their longing (Fig. 1).

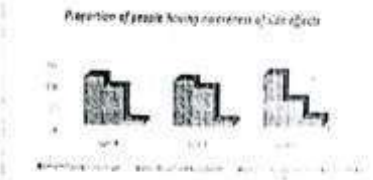

Fig. 1. Proportion of people having awareness of side effects.

DISCUSSION

Afterward the investigation of huge quantity of apprenticeships with respect to the utilization of drugs in Pakistan we conclude that all underdeveloped nations is likewise confronting the emergencies of utilization of steroids in more youthful age. Younger generation are competing to build up their figure. And it seems that a large portion of the weight lifters begin practice as a rule between the age gathering of 15-25 years and continue improving the situation a more extended time of their life expectancy till age of 38-42. Fifty two percent of people believe that it increases the metabolic rate of body.

Articles on the utilization of steroids likewise uncovers that informed people are more brilliant than the uneducated people with respect to their wellbeing. Consequences of our investigation is to some degree not the same as alternate examinations in light of the fact that in different examinations they demonstrated that proportion of uneducated people more to come to exercise center and wellness focuses, however in our examination results are somebody diverse on the grounds that it is the session of enthusiasm and cash. Everybody can't bear the cost of the costly gyms. It is additionally a direct result of the reason that informed people are more wellbeing cognizant than uninformed guys. Additionally, we conclude that some people who are known to side effects but still they are not willing to leave the drugs.

Our nation like the other underdeveloped nations has the male dominancy and men are increasingly inclined to enslavement by steroid to satisfy their craving and to make feel them energetic. Another purpose behind steroid misuse is the uncontrolled accessibility of medications. There is no such parameter for check and parity of prescriptions [13].

Pharmaceutical Action of Steroids

Drugs particularly the hormonal is practically dormant after oral usage where drug experiences the liver pass impact somewhere separates then corrupts then isn't available for entering blood stream. To stay away from debasement of hormone by means of verbal course, subsidiaries of drugs have produced that modifies local androgenic intensity and decline the rate of corruption of testosterone.

Organic moiety can likewise be managed through I/V and I/M course. Therefore, retention rate and calendar of infusion contrast among the diverse people, however the infusions could be done inside like clockwork. What's more, stricter timetable of steroid organization can likewise be made for more noteworthy outcomes [8].

Steroidal drugs utilized in Pakistan

1. Methyl testosterone
2. Methyl nor testosterone
3. Oxandrclone
4. 1-Testosterone

Steroids Way of Progression

Steroids have physiological and biological parameters different to other drugs. They penetrate into layers of cells and impact core of cubicle with straightforwardly following up chamber.

They enhance the function of cells by covering the intracellular signal transduction moieties and involve them to increase the metabolic rate of whole cell [10] or they actuate ways through which signals are being processed to other body portions [12]. Impact of using steroids results in two different ways either they will invigorate synthesis of proteins or they will decrease the breakdown of proteins so that the bulk of cells and in turn the whole body upsurges [11].

Hazardous Effects of Steroids

Steroidal moieties can lead to various reactions, which are as per the following:

Neuropsychiatric effects

Steroid misuse is identified with countless impacts like state of mind changes, hostility, Mania, and brutality. Likewise, the removal side effects also additionally connected with the prolonged haul utilization of drugs [14].

Behavior changes

Fervor with tension is related to long haul usage of steroids [9].

Anxiety

Steroids have a long impact on CNS leading to anxiety and behavioral modifications [15].

Attempts

One of the more awful impact of utilizing steroids for long period of time is that persons become so much depressive that they tried to end their lives [16].

Tumor

Steroidal drugs have been nominated as 2A category drugs by WHO Association of research [17].

CVS effects

Tenacious utilization of steroids additionally consequences in the increase heart rate. Different impacts that incorporate the extension of heart, increasing size of the left ventricle [18, 19].

Development effects

Steroids additionally cause the untimely conclusion of the development plates which would prompt the unusual development. Decreased sexual capacity has additionally been seen in guys [20].

Hair growing

Some female explicit symptoms additionally creates including improvement of hairs in ladies, decline in monthly cycle, developing of male voice and lengthy clitoris [21].

Renal problems

Renal impairment and kidney problem also one of the leading side effects of long term usage of steroids [20].

Impairment of liver

Liver cirrhosis and liver toxicity including jaundice appears as side effects of steroids [19].

Additional effects

Different impacts which might be created because of the utilization anabolic steroids may incorporate the generation of Acne particularly in females because of the incitement of sebaceous organs.

CONCLUSION

After the overhead exchange, it can be reasoned that utilization of steroids is dangerous that could result in various reactions, yet tragically people groups especially the adolescent are not in the frame of mind to leave the medications. The rec center proprietors propose them and even give them the medications with the goal that they may expand their weight. Steroids are critical medications in the method for logical and therapeutic treatment however they are abused to get wanted physical make-up, along these lines things are expected to evacuate the Hole between the competitors and established researches.

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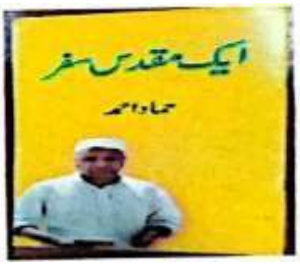

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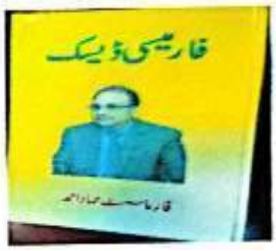
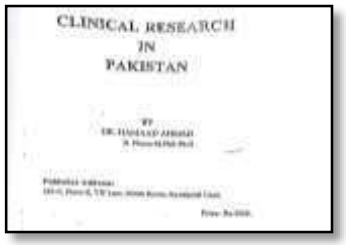


2. Pharmacy Desk

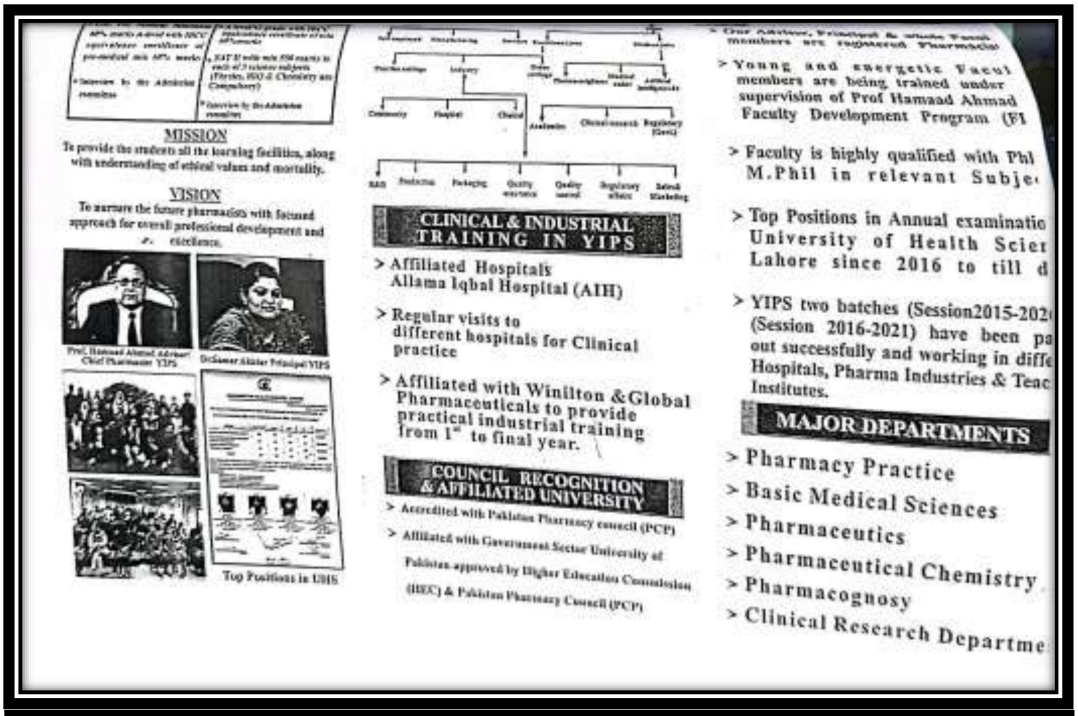
3. Laboratory Evaluations

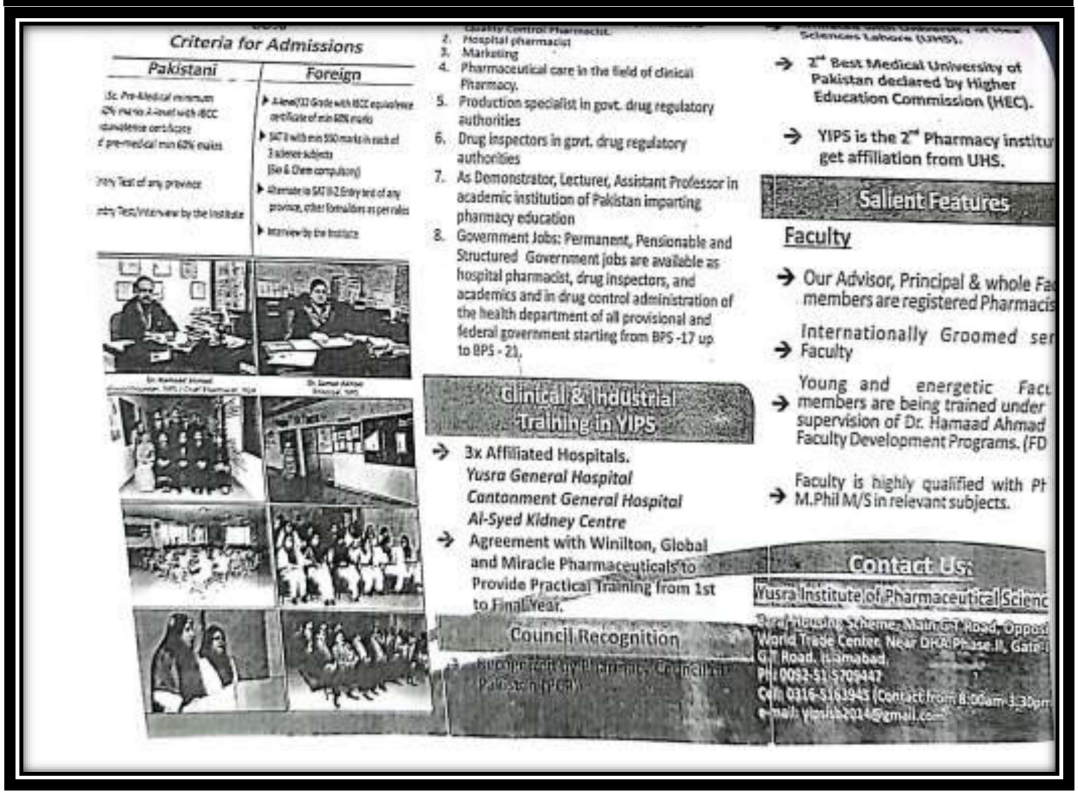


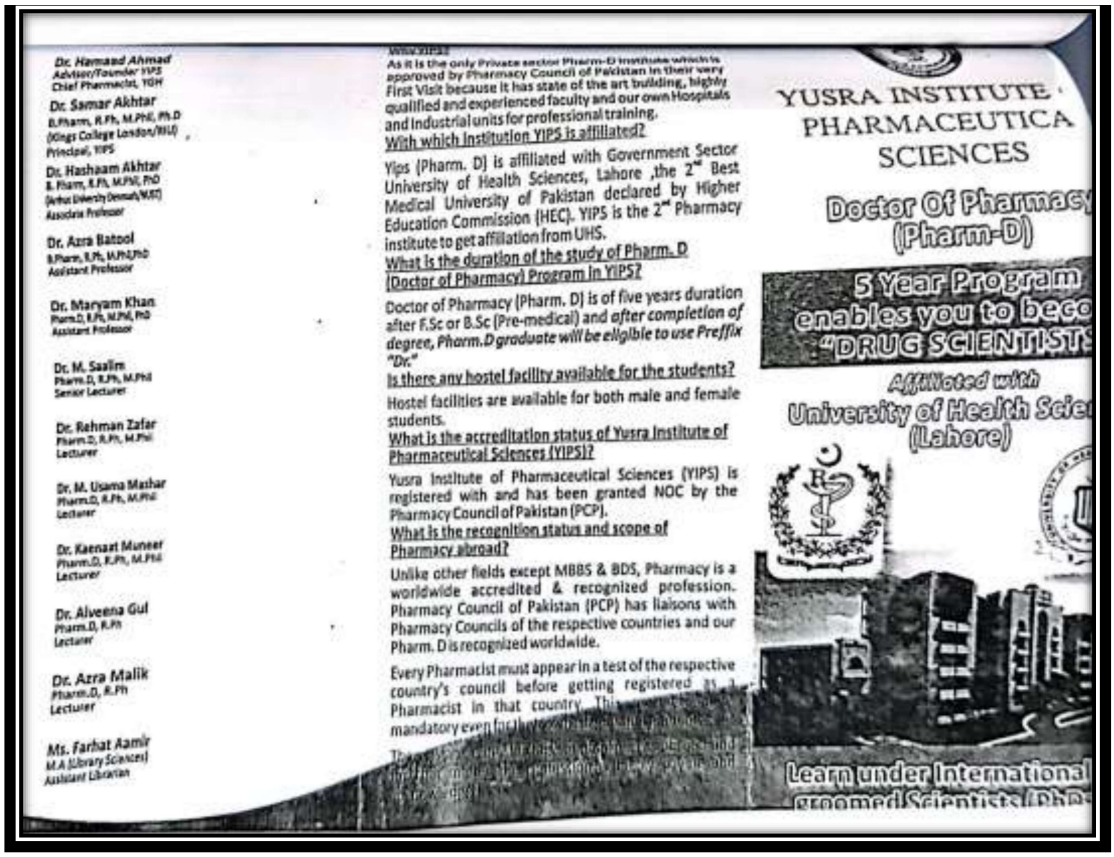
4. Clinical Research in Pakistan

5. Ethical Practices for cGMP

6. Yusra Institute of Pharmaceutical Sciences(YIPS) Boucher






Dr. Hamaad Ahmad
Advisor/Founder YIPS
Chief Pharmacist, YGH
Dr. Samar Akhtar
B.Pharm, R.Ph, M.Phil, Ph.D
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Principal, YIPS
Dr. Hashaam Akhtar
B. Pharm, R.Ph, M.Phil, PhD
(Aarhus University Denmark/WUT)
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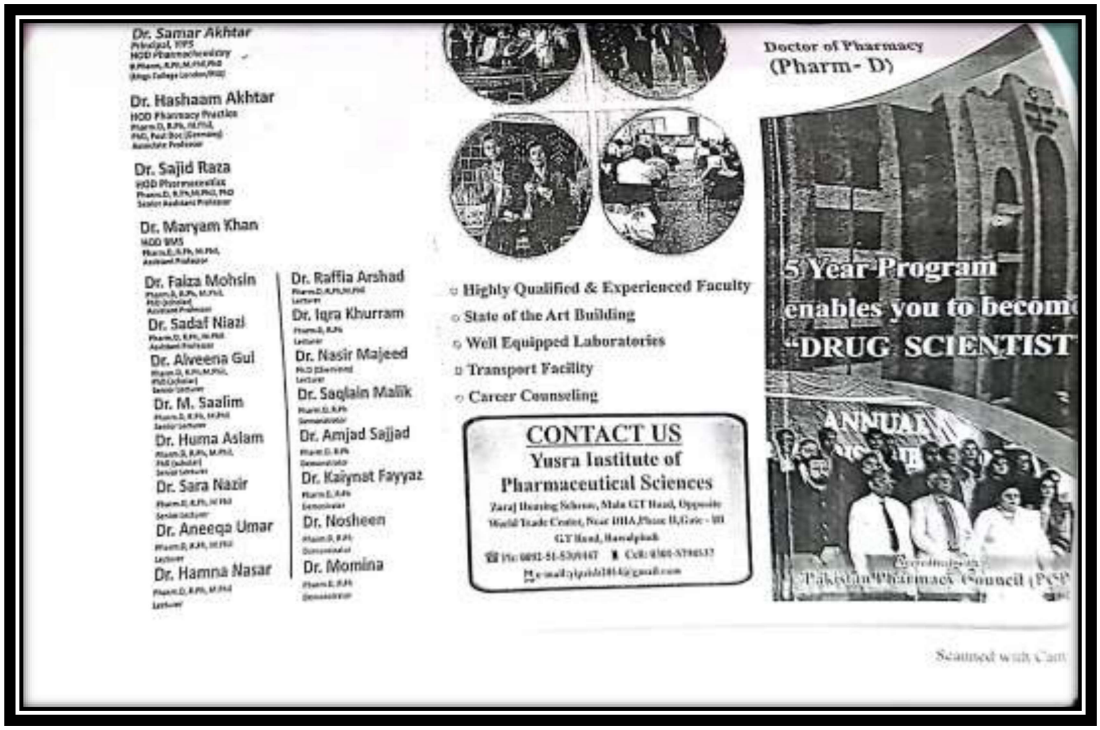
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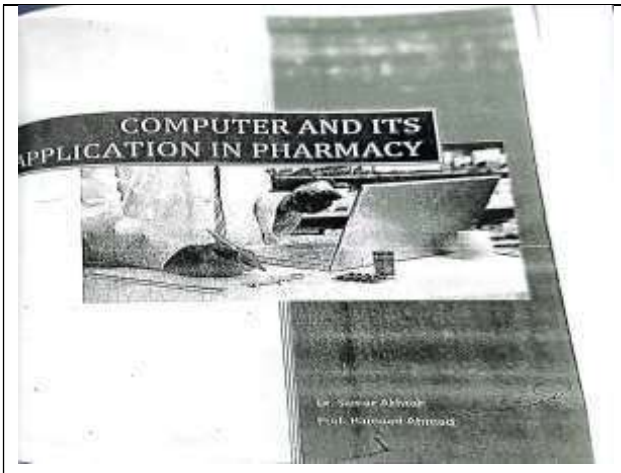
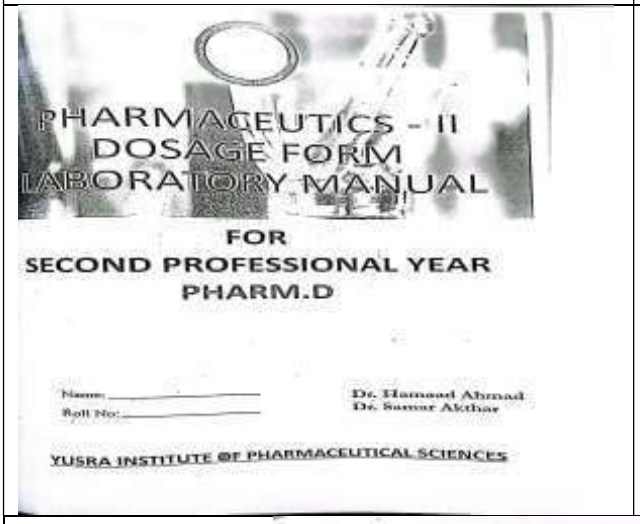
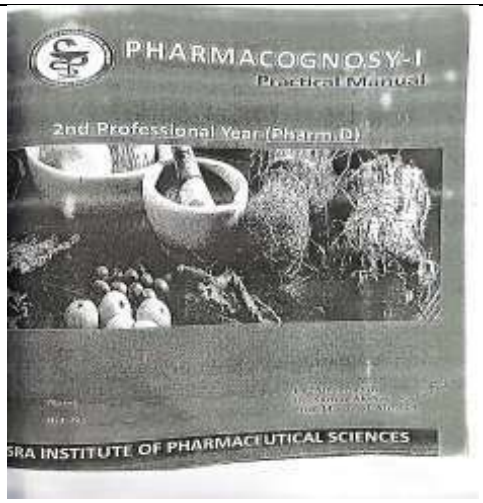
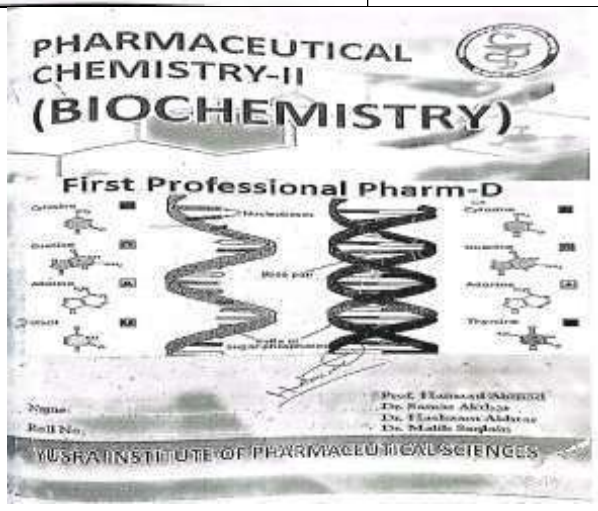
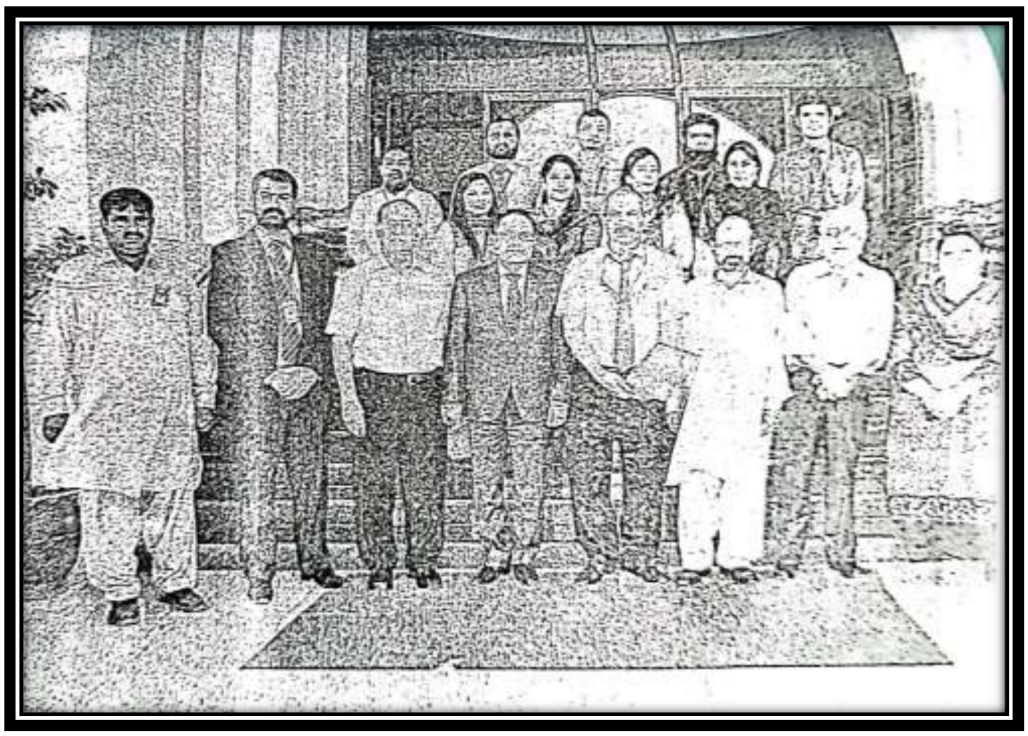








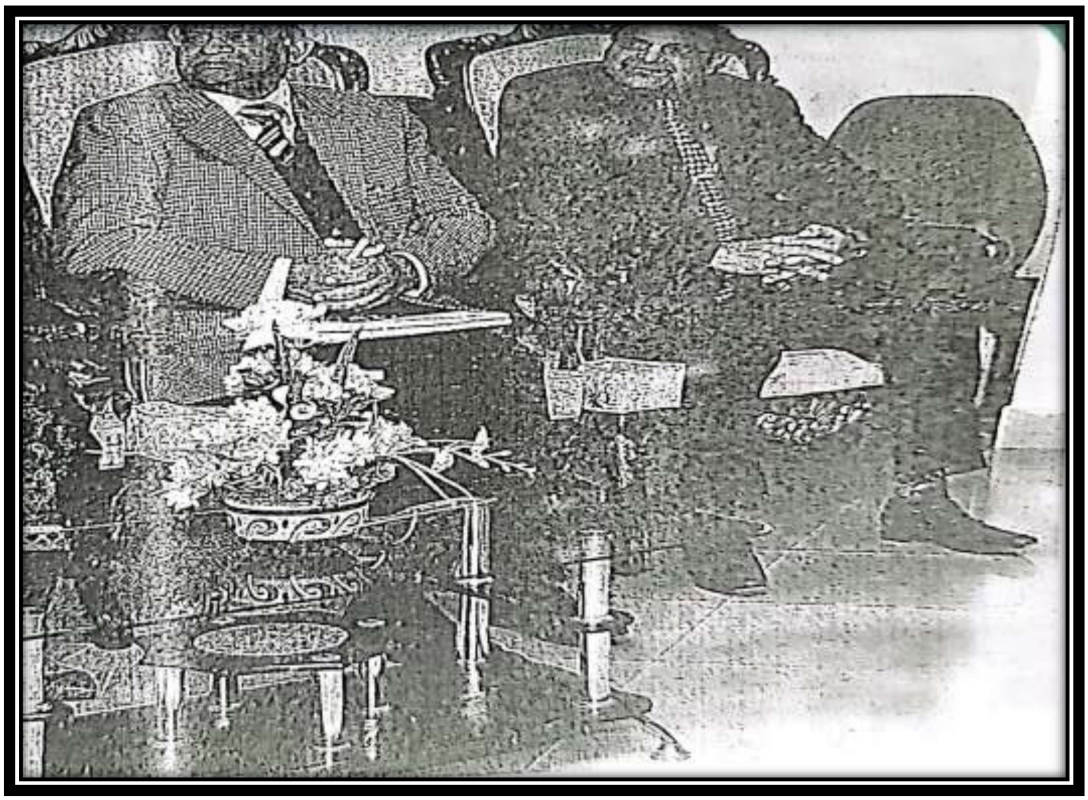
PICTORIAL GLIMPSES



YIPS Faculty with PCP Inspection Team

Dean/Director along with UHS Inspection Team

YIPS Lecture Hall presentation during Inspection



YIPS Dean/Director with Principal Yusra Medical College during Inspection