



The MIZORAM PHARMACISTS 2011-2012

Vol. 5



Pharmacist: A Health Care Professional

A magazine published by **MIZORAM PHARMACISTS' ASSOCIATION**
in collaboration with **MIZORAM STATE PHARMACY COUNCIL**
in commemoration of **National Pharmacy Week 2011**

THE MIZORAM PHARMACISTS-2011

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Aizawl-796001
Off : 0389-2322500
Res : 0389-2325655
0389-2300215
Fax : 0389-2310395
E-mail : irinlianasailo@yahoo.in

LALRINLIANA SAILO
MINISTER
HEALTH & FAMILY WELFARE
LABOUR, EMPLOYMENT & INDUSTRIAL
TRAINING
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GOVT. OF MIZORAM

MESSAGE

Mizoram Pharmacists' Association leh Mizoram State Pharmacy Council tangkawpin National Pharmacy Week 2011 an hmang leh hemi puala Magazine 'The Mizoram Pharmacists' buatsaih a ni thei hi lawmawm ka ti hle a ni.

Pharmacist-te hi damdawi enkawl, siam leh hmuhchhuah kawngah a bika zirna nei in nih avangin mithiam in ni a, in thiamna te nasa zawka hmang tangkai leh zual turin ka duh che u a. Mipui tana him zawka damdawi enkawl kawngah leh Drugs Control kawngah te nasa taka tan la zual turin ka duh che u a ni.

Mizoramah ramhmul damdawi tam tak hmuhchhuah tur a awm niin an sawi thin a, he lam kawnga research in beihna thawm te hriat tur a awm thin a, lawmawm ka tiin nasa zawka bei zel turin ka duh che u a, hmuhchhuah duhawm tak in neih theih nan duhsakna ka hlan bawk che u a ni.

He Magazine hi a chhiartu apiang tana hlawkpuina hlu tak ni turin duhsakna sang ber ka hlan e.

(LALRINLIANA SAILO)



Dr. H. LALHLENMAWIA
PRESIDENT
MIZORAM PHARMACISTS' ASSOCIATION



MESSAGE

National Pharmacy Week 2011 kan thleng leh ta, Pharmacist zawng zawngte chibai ka buk a che u. Pharmacy Week 2011 puala magazine 'The Mizoram Pharmacists 2011-2012' buatsaih a ni leh ta hi a lawmawm ka ti hle a ni. Editorial Board-te chungah lawmthu ka sawi a ni.

Pharmacist-te hmalakna hrang hrangah sorkar thuneitu ten theihtawp an chhuah thin avangin ka lawm takzet a, hun reiloteah Pharmacist ten kan nihna tur leh dinhmun dik tak kan luah ka beisei tlat a ni.

Pharmacist zawng zawngte damdawi thiamna sang tak nei kan ni a, chutih laiin tunlai khawvel changkang chho zel avang leh thiamna thar a pun chhoh zel avang erawh chuan mahni hriatna theuh tihmasawn tura tan kan lak a tul takzet a, inzir chhonzawm zel turin ka chah duh che u a ni.

National Pharmacy Week 2011 hian kan hnathawh theuhvah phur tharna min pe sela, tuang taka in hna theuh thawk chhonzawm zel turin ka duhsakna ka hlan a che u.

Mizoram Pharmacists' Association dam reng rawh se.

Sd/-
Dr. H. Lalhlenmawia



LALSAWMA PACHUAU
PRESIDENT
MIZORAM STATE PHARMACY COUNCIL

MESSAGE

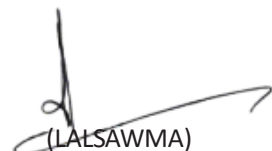
Dear friends,

It gives me immense pleasure once again, in writing this message to all my fellow Pharmacists across the state. It is the third issue of this kind to be published by the Mizoram Pharmacists' Association in collaboration with the Mizoram State Pharmacy Council. I take pride and loudly applaud all the members; who rendered their valuable services and thoughts for the successful publication of this magazine 'Mizoram Pharmacists'. As we all know, to publish any kind of magazine, there must be some persons, who untiringly works behind the scene. Therefore, I must admit and recognise the Editorial Board members for their wonderful works.

In the past, there was a feeling that, the importance of Pharmacist as a healthcare team was ignored by the government as well as the general public. But due to the hard work of the Pharmacy Council of India, the profession of Pharmacy has reshaped its form and regain our actual status. To achieve this goal, every Pharmacists has a big role to play by fulfilling our day to day duty and say, "I did it," "You did it," "We did it."

To end up my message, I want to ask each one of us this simple question: "Have you registered yourself in the State Pharmacy Council?" This is very important for every Pharmacist to register his name in the Pharmacy Council as it is our legal obligation to do so in order to practise our profession.

I do wish that this small publication shall enrich our technical knowledge and enlighten all Pharmacist working in different parts of the state and let us remember once again, "It is never too late to learn new things."



(LALSAWMA)

EDITORIAL



It is a great pleasure to present you all 'The Mizoram Pharmacist 2011' as a part of celebration of National Pharmacy Week 2011. I would like to extend my heartiest greetings to all the members of Mizoram Pharmacist Association (MPA).

First of all, I would like to express my sincere thanks to Mr. Lalrinliana Sailo, Minister, Department of Health & Family Welfare, Government of Mizoram, Pu Lalsawma Pachuau, President, Mizoram State Pharmacy Council and Dr. H. Lalhlenmawia, President, Mizoram Pharmacists' Association for their wonderful and inspiring messages.

I express my sincere gratitude to all the writers who contributed articles for this magazine and also to the advertiser. Without you it would not have been possible to publish this magazine.

I also express my deep appreciation to the Members of the Editorial Board and the Staffs of Mizoram State Pharmacy Council for their bundle of support and cooperation.

I hope and pray that this magazine will provide a well knowledge regarding the health care, drugs and its uses, the importance of Pharmacist in our community health care system and an idea about the scientific research and all the readers will be enlightened through this magazine and spread their knowledge for the betterment of our society.

Sd/-

(R. LALAWMPUII)

General Secretary Report



Lalhmingliana
General Secretary
Mizoram Pharmacists' Association



MPA Member zat : 236

2011-2012 MPA HRUAITUTE

SI No.	Name	Designation	Address of Profession
1	Dr. H. Lalhlenmawia	President	RIPANS, Zemabawk
2	C. Vanthuama	Vice President	Civil Hospital, Aizawl
3	Lalhmingliana	Secretary	CMO 'E', Aizawl
4	K. Lalremmawia	Joint Secretary	CMS, Zemabawk
5	R. Rodingliana	Finance Secretary	Civil Hospital, Aizawl
6	Vanlalhluti	Treasurer	Govt Complex, Luangmual
7	Lalsawma Pachuau	Adviser	Dir. Of Health Services
8	F. Lalliantluanga	Adviser	P/S to Health Minister
9	C. Zoliana	Sr. Adviser	Ramthar, Aizawl

2011-2012 EXECUTIVE COMMITTEE MEMBERS

SI No.	Name	Address of Profession	Phone No.
1	Lalvuana	Civil Hospital, Aizawl	9862809961
2	Lalhmingliani Pachuau	MSACS, Mission Veng	9436142171
3	Zothanpuia	RIPANS, Zemabawk	9862305424
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10	Lalbiakremi Fanai	Greenwood Hospital	9862119898
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16	Thangkima Ralte	Vaivakawn	9436142146
17	Hranglawmzuala	Ramhlun	9612358523

KUM 2011-A KAN PLANNING LEH HMA LAK TAWHNA TE

1) Gen. Conference 2010-a thu dah sa te :

a) Sub-Hqrs dinhmun ennawn ni rawh se

Hmalakna: Sub-Hqrs dinhmun hi Exe. Comm. Meeting chuan zir chian ni se a ti a. Hemi bawhzui hian 6th October, 2011-ah Lunglei Sub-Hqrs tlawh a ni a, member 20 lai kan kal.

b) Continuing Education leh Bachelor of Pharmacy practice course chungchang

Hmalakna: Hei hi Pharmacy Council of India-ah sawiho lai mek a nih avangin an thu leh hla kan ngaichang mek a ni.

c) MSPC registration leh renewal tana MPA recommendation chungchang

Hmalakna: Hemi chungchangah hian thingtlang lam fee pete chuan Mizoram State Pharmacy Council-ah renewal fee pek paha pek mai turin leh, lo dawngsawng turin MSPC ngen tawh an ni.

d) Drugs Store supervision tura thingtlang Pharmacist-te hman chungchang

Hmalakna: Hemi chungchang hi min ngaihtuahpui turin Drugs Controller-ah thlen a ni a, ngaihtuah mek zel a ni.

2) National Pharmacy Week 2011

Hmalakna: National Pharmacy Week-ah hian Annual Magazine chhuah leh tha kan ti a, Editorial Board hetiang hian ruat a ni:

Editor-in-Chief : Pu Lalsawma Pachuau, DDC
 Editor : Nl. R. Lalawmpuii, Asst. Professor
 Jt. Editor : Tv. Laltanpuia, M.Pharm
 Circulation Manager : Tv. Malsawmdawngliana
 Members : MPA OB zawng zawng & Tv. Zosangliana

Heng mite hian chak taka hma lain, National Pharmacy Week 2011-2012 tha tak buatsaih a ni.

National Pharmacy Week 2011 programme chu hetiang hian duan a ni:

PROGRAMME

A hun	:	17th November, 2011
A hmun	:	YMA Hall, Chanmari, Aizawl
Registration	:	11:30-12:30
Chief Guest	:	Pi M. Zohmingthangi Secretary, H&FW
Compere	:	Pu Zothanpuia, Asst. Prof., RIPANS & Pi R. Lalawmpuii, Asst. Prof., RIPANS

Inaugural Session

# Devotion	:	Upa C. Hmingthandanga PHC, Kawnpui
# Presidential Address	:	Dr. H. Lalhlenmawia President, MPA
# Gen. Secretary Report	:	Pu Lalhmingliana General Secretary, MPA
# Pharmacy Student of the Year 2011	:	S.L. Sailo Pharmacy Award
# Solo	:	R. Lalmangaihzuai
# Speech & Release of Magazine	:	Chief Guest
# Solo	:	R. Lalmangaihzuai
# Distribution of Certificate & Speech	:	Pu Lalsawma Pachuau President, MSPC
# Cultural Dance of the North-East	:	RIPANS students
# Vote of thanks	:	Pu C. Vanthuama Vice President, MPA
# Dinner	:	3:30 pm

3) Pharmacist Refresher Course 2011

Hmalakna: Hei hi Mizoram State Pharmacy Council chuan RIPANS hmunah 14-16 November, 2011 hian a buatsaih leh dawn a ni.

4) 63rd Indian Pharmaceutical Congress-a palai intirh chungchang

Hmalakna: 63rd Indian Pharmaceutical Congress, 16-18 December, 2011-a neih turah hian kal tura diltu awm chhun, Nl. Lalbiakmawii Hmar, Pharmacist, CHA leh Pi Vanlalhluti, Treasurer, MPA te chu thlan an ni a, an kalna senso hi Mizoram Pharmacists' Association-in a tumsak dawn a ni.

5) District Hqrs-a Pharmacist-te tlawh chungchang

Hmalakna: 6th October, 2011-ah Lunglei Sub-Hqrs tlawh a ni a, member 20 lai kan kal thei a. Sub-Hqrs dinhmunte kan sawiho va, Sub-Hqrs tichak leh zual tura theihtawp ahma lak zel ni se tha kan ti a. Hma lo la turin Con- vener-ah Pu H. Vanlalnghaka, ADC ruat a ni.

6) MPA Golden Jubilee lawm chungchang

Hmalakna: 2013 MPA Golden Jubilee (Estd. 11.2.1963)-a hman turah Organising Committee din a ni a, heng Organising Committee-te hian hma an la chho mek zel a ni.

- Chairman : Pu Lalsawma Pachuau, DDC
Vice Chairman : Dr. H. Lalhlenmawia, President, MPA
Secretary : Pu Lalhmingliana, Gen. Secy, MPA
Members : 1)MPA OB dang zawng zawngte
2)Pu F. Lalmama, Chhinga Veng, Aizawl
3)Pu Sanglura Sailo, Electric Veng, Aizawl
4)Pu Thangkima Ralte, Vaivakawn, Aizawl
5)Pu C. Zoliana, Ramthar, Aizawl

7) Pu C. Lalnuntluanga, Supt. Pharmacist (Rtd), Chhipphir khua, ni 12.11.2010- a min boralsan ta chu January ni 22, 2011-ah MPA hruaituten an khuaah Rs. 10,000-in an ral. Pu Zahmingliana, Head Pharmacist (Rtd), ni 27.07.2011- a boral chu ni 4.8.2011-ah Rs. 10,000-in ral a ni bawk.

MPA FINANCIAL REPORT

Report hun chhung 22.11.2010 - 29.09.2011 a ni.

Opening Balance	:	Rs. 98,194.00
Total Income	:	Rs. 1,37,460.00
Grand Total	:	Rs. 2,35,654.00
Cash Balance	:	Rs. 1,05,538.00
Pass Book	:	Rs. 22,000.00

RP-HPLC Quantitative determination of Aloin in Aloe vera found in Mizoram

*Dr.H. Lalhlenmawia, Rosiamliana Colney, Vanlalnghaki
Department of Pharmacy
Regional Institute of Paramedical and Nursing Sciences
Zemabawk, Aizawl, Mizoram*

Introduction

Aloe vera, also known as the true or medical aloe is a stemless or very short stems species of succulent plant in the genus. Aloe that is believed to have originated in Sudan. It is an important and traditional medicinal plant belonging to the family Liliaceae. It is indigenous to Africa and Mediterranean countries. It is reported to grow wild on islands of Cyprus, Malta, Sicily, Carary Cape, Cape Verde and arid tracts of India. Aloe can be substitute synthetic ingredient used in cosmetic industry very competitively and is finding increasing use in the ever growing consumer product segment. In Mizoram, Aloe vera was found in many places and some are cultivated as house plants. The present works aim to investigate the amount of aloin content in the aloe vera cultivated in Mizoram.

Aloin is a glycoside and is resistant to normal acid hydrolysis but may be oxidised with ferric chloride. Studies indicated a sugar-like chain and where sugar is joined to the aglycone with a direct C-C linkage. Two aloins (A&B) arise from the chiral centre C-10.

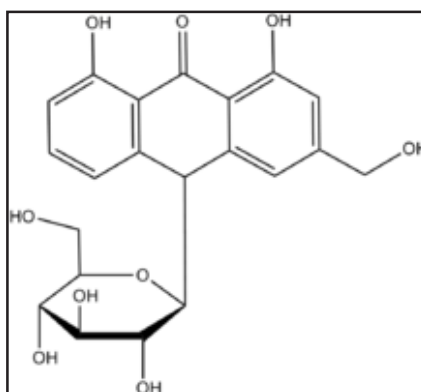


Fig 1 : structure of Aloin

Once ingested, aloin increases peristaltic contractions in the colon, which induces bowel movements. Aloin also prevents the colon from re-absorbing water from the GIT; which leads to softer stools. This effect is caused by aloin's opening of chloride channels of the chloride membrane. In higher doses, these effects may lead to electrolyte imbalance, diarrhoea, and abdominal pain, which are common side-effects of the drug. Because aloin can potentially cause uterine contractions, pregnant women should avoid ingested aloe product.

In small doses it acts a tonic, assisting digestion, giving tone to muscular tissue, and exerting a special influence on liver. In large doses it becomes a strong purgative, acting especially on the large intestine, increasing the intestinal secretions and the peristaltic action of the bowels. In combination with strychnine and belladonna, aloin becomes one of the most effective and popular laxatives for chronic constipation.

Materials and method

Binary pump HPLC with UV-VIS Detector made by WATERS was used, UV-VIS spectrophotometer made by JASCO V-530 was used. The pure aloin sample was received from Sigma - Aldrich and all others reagent used were of HPLC and analytical grade obtained from Merck.

Determination of aloin standard by HPLC

As described by Chun-Li Hu et al, (2008), 100 mcg of Aloin was injected with the HPLC condition given in 2.1. The retention time of Aloin was found to be 2.436 min. The HPLC chromatogram of Aloin standard was given in Fig. 1. The chromatogram after processing with HPLC software is given in Fig. 2.

For validation of the method, a replicate injection was done at different concentrations like 20mcg, 30mcg, 40mcg, 50mcg, 60mcg, 70mcg, 80mcg, 90mcg and 100 mcg. After overlapping the chromatogram, the % RSD was found to be 0.12, given in Fig 3 and 3(a).

Extraction of aloin from Aloe vera (Edwin Cock and David Ruebhart, 2008; LI Jing-Yuan et al, 2003):

The aloe vera plants was collected from Republic veng Aizawl. Immediately after plucking the Aloe leaves, the leaves were cut and the outer green rind was discarded. 66.216 g of the mucilaginous inner pulp (i.e., the aloe gel) was minced and 70 ml of methanol was added and thoroughly homogenised using homogeniser (500 rpm for about 2 hrs). It was then filtered by vacuum filter. The filtrate was collected for determination of Aloin.

Determination of aloin in sample by HPLC:

The filtrate collected was again filtered through cellulose filter. About 20 μ l of filtered sample was injected in the HPLC maintain the condition as given in 2.1. The chromatogram obtained is given in Fig.4.

After processing the chromatogram, it was found that the injected sample contain 62.443 mcg/ml Aloin as given in Fig. 5. The multiple summary of Aloin standard and the sample chromatogram is given in Fig. 6 and 6(a). The % RSD was found to be 0.54 which was considered satisfactory for identification as well as quantification

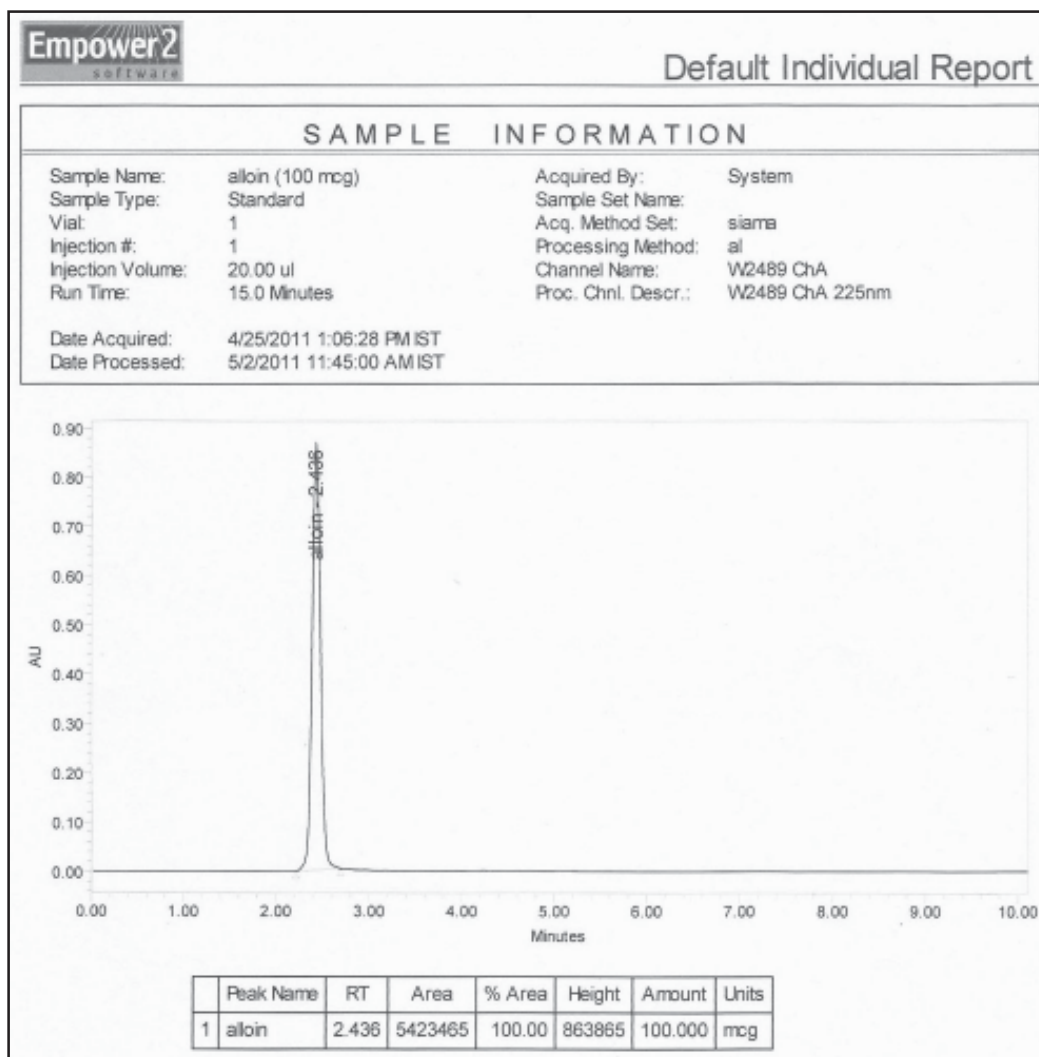
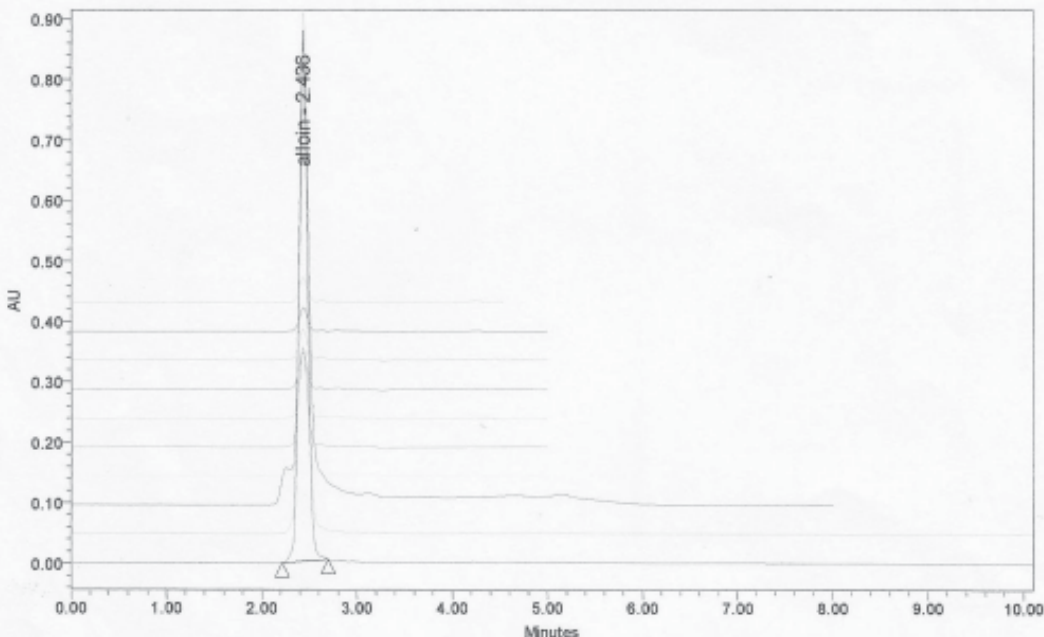


Fig 2: HPLC spectrum of Aloin standard

Empower2
software

Peak Summary Report



- Sample Name: aloin (100 mcg); Date Acquired: 4/25/2011 1:06:28 PM IST; Vial: 1; Injection: 1
- Sample Name: aloin (100 mcg); Date Acquired: 4/25/2011 1:06:28 PM IST; Vial: 1; Injection: 1
- Sample Name: aloin (90mcg); Date Acquired: 4/25/2011 1:21:30 PM IST; Vial: 1; Injection: 2
- Sample Name: aloin (80mcg); Date Acquired: 4/25/2011 1:41:23 PM IST; Vial: 1; Injection: 5
- Sample Name: aloin (70mcg); Date Acquired: 4/25/2011 1:56:06 PM IST; Vial: 1; Injection: 6
- Sample Name: aloin (60mcg); Date Acquired: 4/25/2011 2:07:15 PM IST; Vial: 1; Injection: 7
- Sample Name: aloin (50mcg); Date Acquired: 4/25/2011 2:14:09 PM IST; Vial: 1; Injection: 8
- Sample Name: aloin (40mcg); Date Acquired: 4/25/2011 2:23:46 PM IST; Vial: 1; Injection: 9
- Sample Name: aloin (30mcg); Date Acquired: 4/25/2011 2:42:44 PM IST; Vial: 1; Injection: 11
- Sample Name: aloin (20mcg); Date Acquired: 4/25/2011 2:55:56 PM IST; Vial: 1; Injection: 13

Peak Summary with Statistics

Name: aloin

	Sample Name	Vial	Inj	Name	Retention Time (min)	Area	% Area	Height	Amount	Units
1	aloin (100 mcg)	1	1	aloin	2.436	5423465	100.00	863865	100.0	mcg
2	aloin (20mcg)	1	13	aloin	2.436	321352	100.00	42419	20.0	mcg
3	aloin (30mcg)	1	11	aloin	2.437	319258	100.00	40470	30.0	mcg
4	aloin (40mcg)	1	9	aloin	2.436	402639	100.00	52203	40.0	mcg

Fig 3 (a) & (b) : HPLC Spectrum of Aloin standard after replicate injections.

Peak Summary with Statistics
Name: alloin

	Sample Name	Vial	Inj	Name	Retention Time (min)	Area	% Area	Height	Amount	Units
5	alloin (50mcg)	1	8	alloin	2.433	503938	100.00	62423	50.0	mcg
6	alloin (90mcg)	1	2	alloin	2.444	6015468	92.16	732601	90.0	mcg
7	alloin (100 mcg)	1	1	alloin	2.436	5423465	100.00	863865	100.0	mcg
8	alloin (60mcg)	1	7	alloin	2.436	729830	100.00	106073	60.0	mcg
9	alloin (70mcg)	1	6	alloin	2.434	1111074	100.00	165610	70.0	mcg
10	alloin (80mcg)	1	5	alloin	2.437	1282809	100.00	199530	80.0	mcg
Mean					2.437					
Std. Dev.					0.003					
% RSD					0.12					

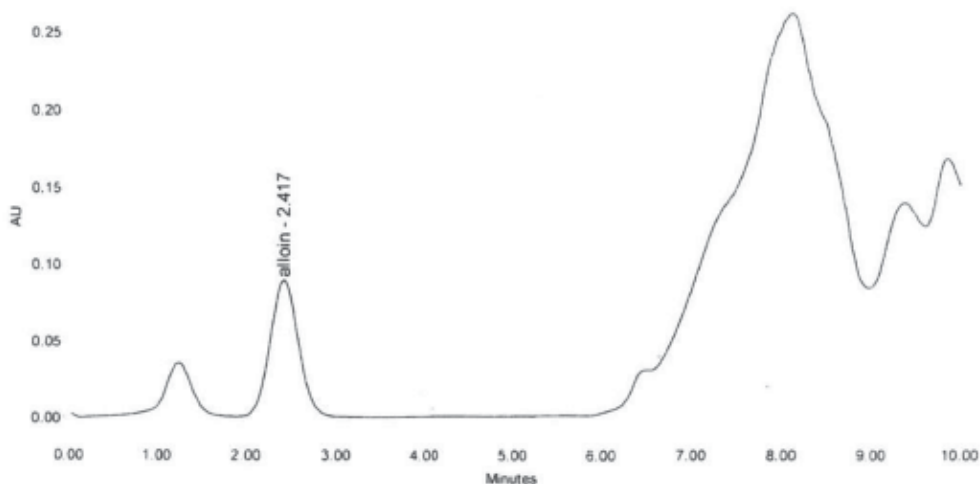
Fig 3 (b)



Default Individual Report

SAMPLE INFORMATION

Sample Name:	Aloe vera	Acquired By:	System
Sample Type:	Unknown	Sample Set Name:	
Vial:	1	Acq. Method Set:	siama
Injection #:	1	Processing Method:	al
Injection Volume:	20.00 ul	Channel Name:	W2489 ChA
Run Time:	10.0 Minutes	Proc. Chnl. Descr.:	W2489 ChA 210nm
Date Acquired:	7/7/2011 3:33:15 PM IST		
Date Processed:	7/13/2011 2:26:27 PM IST		



	Peak Name	RT	Area	% Area	Height	Amount	Units
1	alloin	2.417	1952288	100.00	89050	62.443	mcg

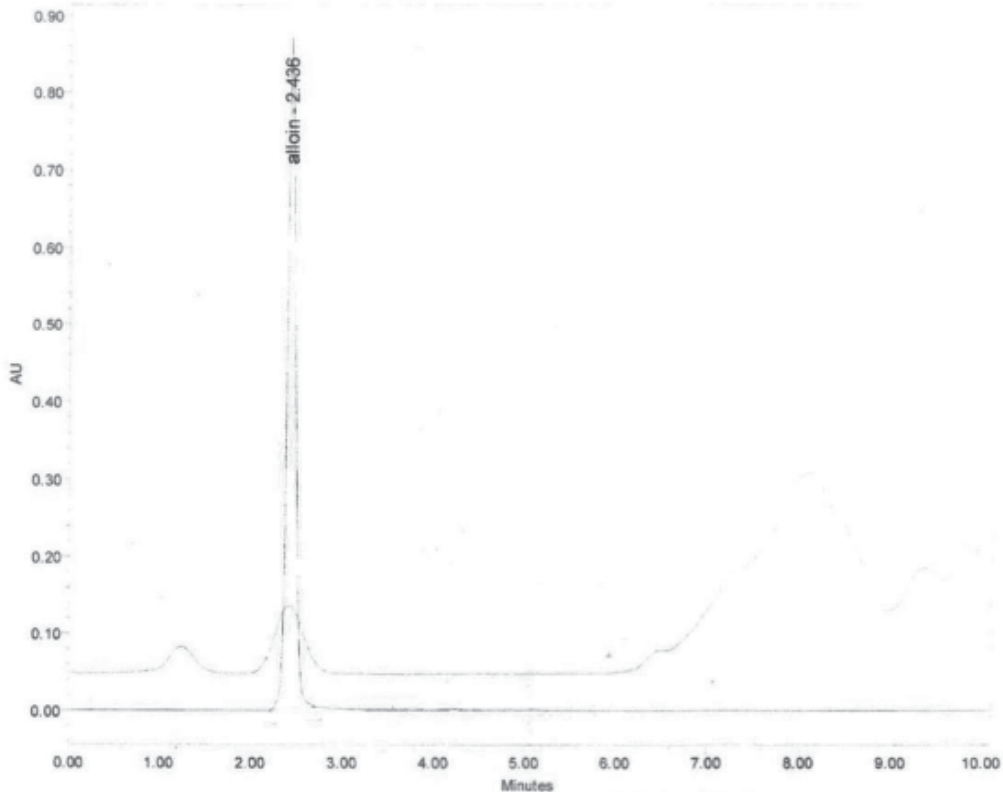
Reported by User: System
 Report Method: Default Individual Report
 Report Method ID: 1004
 Page: 1 of 1

Project Name: 2011 students project
 Date Printed: 7/13/2011
 2:40:35 PM Asia/Calcutta

Fig. 4

Empower2
software

Peak Summary Report



— Sample Name: alloin (100 mcg); Date Acquired: 4/25/2011 1:06:28 PM IST; Vial: 1; Injection: 1
 - - - Sample Name: Aloe vera; Date Acquired: 7/7/2011 3:33:15 PM IST; Vial: 1; Injection: 1

Peak Summary with Statistics
Name: alloin

	Sample Name	Vial	Inj	Name	Retention Time (min)	Area	% Area	Height	Amount	Units
1	alloin (100 mcg)	1	1	alloin	2.436	5423465	100.00	863865	100.0	mcg
2	Aloe vera	1	1	alloin	2.417	1952288	100.00	89050	62.4	mcg
Mean					2.427					
Std. Dev.					0.013					

Reported by User: System
 Report Method: Peak Summary Report
 Report Method ID: 1009
 Page: 1 of 2

Project Name: 2011 students project
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Fig. 5

Peak Summary with Statistics										
Name: aloin										
	Sample Name	Vial	Inj	Name	Retention Time (min)	Area	% Area	Height	Amount	Units
% RSD					0.54					

Fig. 6

RESULTS

From the above experiment we found that at 1ml/min flow rate of methanol:water (45:55), at 210 nm detection wavelength, the retention time of standard Aloin was found to be 2.436 min.

After injecting the sample, the retention time of aloin was identified at 2.417 minutes after comparing with the standard marker. The injected concentration of Aloin in the sample was found to be 62.443 mcg/ml. Therefore, the sample contains 0.066019 gm/100 gm of aloe gel.

Thus, the Aloe vera collected from house-plant of Republic Veng contains 0.066019 gm of Aloin per 100 gm of Aloe gel. And the percentage content was found to be 0.099% to 0.1%.

Mizote leh
V A I H L O

Z.T.Vawra Hmar
District Coordinator
South Mizoram
Mizoram State Tobacco Control Society

Vaihlo tobul

Tun tum chu kan hnam nun a bet tlat anga kan ngaih Vaihlo hi hnam nunah be tir loh dan in zawng teh ang. Mizote hi Kum Zabi 16-na bawr vel khan Khawchhak lam atanga thlangtlain Tiau rawn kan thla zel in tuna Mizoram kan tih Lushai Hills ni thin hi kan lo luah chho tan a, tlang hran hranah in bawkrangin Lal rorelna hnuaiah a theih ang angin kan in enkawl chho ve a ni. Mizote hi lo neia eizawng thin kan ni a, ram lamah te hna thawkin lovahna hmunah thochimte, thosi, vaihmite te hnawhbonan tiin mei zuk kan in zirtir chhova, naupang te te pawh ram tang rual an nihin meizuk an ching chho nghal mai a ni. Tlangval tan phei chuan lawmnu ten a an sam zaia an tawn sak ngat an zu phei kha chu an in tithei hle thin reng a ni. Kum 1894-ah Kristianna rawn lut tanin

Mizoten kan tih thin dan thil tam tak chu Kristiannain rawn nuaibovin hma kan sawn chak hle a. Amaherawhchu kan missionary te ngei ngei pawh khan Vaihloin kan taksaah nghawng thalo tak tak a nei a ni tih an hre lo a ni chek ang a, anmahni ho a din Biak Inah pawh Mizoten mei an zuk khuk luih luih thin thu an sawite ka hriat hian hmanlai kan pi leh pu te nundante, Vaihlo that loh zia zirchianna a la rei loh nen phei chuan awm viau chuan ka hria. Khang hun lai khan Vaihloin kan taksaah nghawng thalo tak tak a nei a ni tih hi khawvel pum huapawn hriat chian a la ni lo a ni.

Khawvel pumah hian Vaihlo hian kum 8000 kalta vela tang khan bu a khuar tan nia hriat a ni. Tin India ram bikah hian kum 1600 bawr chho vel khan Portugues sumdawngmi ten an rawn pu lut tan chho bawkrangin. A hmasa

ber atan India ram ah kum 1787 khan Calcutta (tuna Kolkata ni ta) ah khuan Botanical Garden Sidburah Vaihlo chin hi an lo enchhin tawh a ni. Tichuan Vaihloa sumdawna chu a lo thangchak hle mai a, kum 1901 khan America leh Britisha Vaihlo siamchhuaktu company lian tak chuan an huang zauhin India ramah Imperial Tobacco Company an din a, mahse a hnu lawkah he company hi Indian Tobacco Company niin ITC Limited tiin an thlak zui leh ta a ni. Tichuan reiloteah India ram chu khawvel pumah Kum 1938 atang khan Vaihlo hralhchhuak hnember Pahnihna a ni chho hial a ni.

A chungah Vaihlo chanchin kan tar lan atanga chhut hian India rama an chin hmasak ber pawh kum 1787 a ni a, tichuan India ramah Kum 224 vel mihringte nunah hmun changin, mihring thahnem tak nunna a lo suat tawh a ni. Mizote hi kan sawi tak ang khian Mizoram kan luah pawh kum tam ala nih loh laia hnam nuna bet tlat anga kan ngaihna hi paihbo a hun ta hle a ni. Kan nitin mamawh eichawp pawh nilo, kan hriselna titha a, kan tha tichaktu pawh nilo hnam nuna beh tir tlat tum hi a fin thlak ber ta lo niin a lang. Kan mizo pipute mei zu chungin rei tak tak pawh an dam a lawm mawle, cancer-in an thi hleinem kan ti pawh a ni mai thei, a dik a lawm engemaw chen chu. Mahse han chhui Chiang tak takila kan pi leh pu hunlaia an thih pui tam ber natna chu Ngawr, pumna, khawsikpui vel kha a ni a, tunlaiin khawl changkang tak cancer

a nih leh nihloh enfiahna lo awm ta se an cancer fur a rinawm a ni.

Vaihlo hman hi SUAL a ni

Tichuan, kan pi leh pu ten an lo hman nasat em avangin kan hmang chho ve ta zel a, lo hna thawk lem lo pawn, kan han rawlthar/tleirawl chhuah hlimin a zuk a hmuamtein kan han tan chhova mipa tam tak phei chuan meizial han zukte kha pa tлата in hriatna kan nei a, kan in tih hmuh chak em em a ni. Khawvel hmun danga an neih ve miah loh TUIBUR thlengin kan nei ta zel, kan nun zawng a suat hnem narawh e. Tichuan ZU te, Drugs-te ang in kan taksa tana a that lohna a lang chhuak ve mai si lo, mizote hriatthiam loh zawng chiin a thawk muang si a, a thatlohna kan hre chhuak mai silova, kan la hmang mek zel zawng a nih hi. Kristian ram kan nih hmata kha chuan engpawh lo tiin lo be thin pawh ni ila a in dem awm chuang lohin ka hria. Kristianna lo luh hnuah finna tam tak leh Pathian malsawmna dawngin kan ram alo changkang chhova, Pathian ram zauh turin ram pawn thleng thlengin kan in tir chhuak ve ta ruih ruih mai le. Mahse enge kan mu tan leh kan hma sawnna dal tu chu ni ta, in ngaihtuah Chiang ngai em kan Pathian thu chuan engtin nge atih "Chutichuan unaute u, Pathian khawngaihna avang hian, inthawina nung leh thianghlim leh Pathian lawm tlak ni turin in taksa chu inhlana ka ngen a che u; chu chu in rawngbawlna awm reng a ni" ROM 12:1 tiin min hrih, kan taksa ti bawlhhlawha kan hriselna khawichhetu hi thil dang

ZU, Drug te suala kan ngaih ang chiah hian Vaihlo zuk leh hmuam tih hi SUAL a ni tih kan pawm ngam hi a hun ta tak zet a ni.

Rawngbawl na peng hrang hrangah Hnam hrang hrangte zirtirna pein Bible chang thu tha tak hrilhin kan pianthar tir, mahse a hrilhtu ber Mizote hi Zuk leh Hmuam-SUAL lakah kan fihlim lohna an hmu kar si a, chu chuan nasa takin Pathian ram zauhna kawngah pawh hian min dal thin niin a lang. Vaihlo hmanin kan taksa peng hrang hrangah nghawng thalo a neih chu tupawhin kan sawi teuh thei tawh mai thei, a danchungchangte pawh ka hre viau tawh maithei mahse engvang nge Vaihlo hman kan bansan theih loh, Kristian tha tak tak zingah pawh in ngaihtuah chian ava ngai tawh tak em, Sunday school zirtirtuin a naupangte zirtirna tha tinreng a pe a, a nin Vaihlo hman sim a tum si lo, SUAL a nih kan pawm duh loh vang a ni mai lo maw? Kan taksaah harsatna min siam thleng nghah kan tum em ni, nge kan duhber chu kan thih pui thak zawk dawn kan ti a nih pawhin, nang chuan i tuar thei a ni mai thei mahse nangmah avanga midang tawrhna nasat zia i chhut tel ngai em le? I meizuk

khu(Second hand smoke) avanga i tu, i fa, i chhungte, i thawhpuite leh zelin an lo tawrh ve hi mi huaisen Mizo i nih ngai chuan i phal thei dawn em ni. SUAL a nih i pawm thei lo a nih pawhin mi dangin an tawrh ve lohna tur a tan tal pawh i sim thei dawn lawm ni.

Zoram siamthatnan Vaihlo hman sim a hun ta :

Kan hnam nunah Vaihlo hi a bet tlat a nih tih theih turin India ramah pawh Kum 224 vel chiah kan la hmelhriat a, Kristian kan nih hnuah kum 100 kan tlinna a la rei lova, kan hnam a la naupanga, thil tha lo lam ni lovin thiltha lampang zawk hi kan hnam nunah beh tir ila, tun hunah kan insiam tha thei lo a nih pawhin kan tuchhuan lo la kal zel turte venhim hi Mizo mipui ramhmangaih tak tak tute tan chuan kan mawhphurhna dik tak a ni tih kan hriat chian a pawimawh tak zet zet a ni.

Chuvang chuan mizo mipuite kan lo hrisel zawk nan leh kan ram a lo changkana kan tu chhuante tan ram nuam kan siam theihna turin Vaihlo hman sim turin tan i la thar ang u. Vaihlo hman sim duhte tan tanpui kan in huam reng e.

Ph 0389-2306718 Email : smokefreemizoram@gmail.com

ROLE OF STEREO CHEMISTRY IN DRUG ACTION

R. Vanlalruata

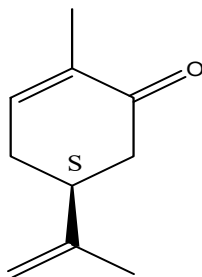
Deptt. of Pharmacy, RIPANS, Aizawl

In 1953, Stanley Miller and Harold Urey performed an experiment to prove the 'Life in a test tube'. They mixed up methane, ammonia, hydrogen & water vapor and passed them through an electric discharge. The product of this experiment was few amino acids.

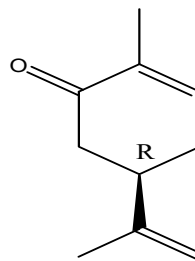
Amino acids are the major component of protein and they are also called as building blocks of protein. So, from where life came to earth? Is it from the random chance mixture of chemicals that resulted in amino acids???But chirality destroys this idea completely. All of the Amino acids, Glycerides, sterols, carbohydrates, Ribose and deoxyribose are chiral and possesses specific stereochemistry. It is obvious that they are not the result of random mixture of chemicals.

Stereo chemistry is defined as the 3D arrangement of groups or atoms around carbon atom. And we call a carbon compound as chiral carbon if it is attached to different groups or atoms. Nearly all the biological polymers are chiral. All amino acids in proteins present in the body are 'left handed' and all sugars in DNA and RNA are 'right handed'. Moreover, in our body, proteins & DNA possess a unique 3D shape, and because of this architecture, all the biochemical processes work. It's the chirality which provides this unique shape for protein & DNA.

Now let us see the role of chirality in selective & specific therapeutic agents. The 2 enantiomers of a chiral drug may differ significantly in their bioavailability, rate of metabolism, metabolites, excretion, potency and selectivity for receptors, transporters and/or enzymes, and toxicity. The 3D structure, responsible for chirality, effects physical perception, differential behavior of enantiomers with respect to sensory organs. For example, (R)-(-) Carvone possess peppermint odour whereas (S)-(+) Carvone possesses Caraway seeds odour. And (S) Limonene possesses Lemon odour but (R) Limonene possesses orange odour.

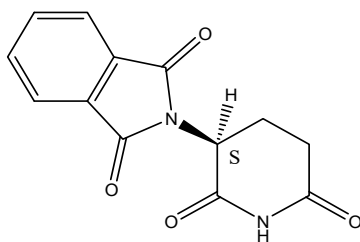


(S)-(+)-Carvone

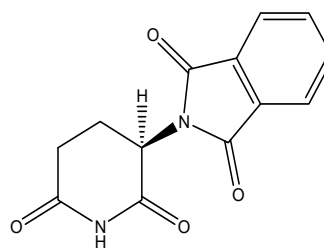


(R)-(-)-Carvone

Different behavior of a drug is observed with different enantiomers. Certain drugs can exist in different enantiomeric form and these different enantiomers possess actions which are very different from the original form of a drug. Enantiomers are isomers which are mirror image to each other. Let us take Thalidomide as an example.



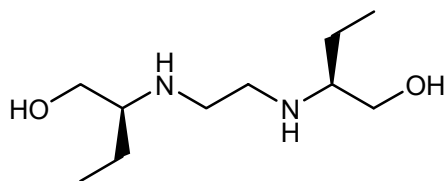
(S)-Thalidomide
Tranquilizer



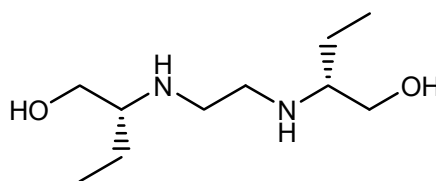
(R)-Thalidomide
Teratogen

The racemic drug was administered as a tranquilizer during pregnancy. Later, it was found out that (S)-Thalidomide possesses Tranquilizing activity, but (R)-Thalidomide is teratogenic, causing phocomelia in new born.

Ethambutol is a bacteriostatic anti-mycobacterial drug prescribed to treat tuberculosis. It can exist in enantiomeric forms, (SS) and (RR). (SS)-Ethambutol possesses anti-tubercle activity whereas (RR) Enantiomeric form causes blindness.



(SS) Antitubercular Drug



(RR) Causes Blindness

Ethambutol

Another important example is Carvedilol, which is a non selective beta blocker indicated in the treatment of mild to moderate congestive heart failure (CHF). (S)- Carvedilol, a drug that interacts with adrenoreceptors, is 100 times more potent as beta blocker than the (R) Isomer.

Another important effect which a stereochemistry has in a drug is its absorption. Absorption is the process by which a drug enters the bloodstream without being chemically altered or it is the movement of unchanged drug from its site of application into the blood stream. Let us take Halofantrine as an example. Halofantrine is a drug used to treat malaria. It is a chiral compound which exhibits both enantioselective plasma pharmacokinetics and extensive lymphatic absorption when administered postprandially.

Lymph samples collected from thoracic duct cannulated dogs dosed with racemic Hf (100mg, administered postprandially) were assayed with a chiral HPLC method capable of quantifying the relative amounts of (+) and (-) Halofantrine (Hf). During the period when the majority (>95%) of Hf transport into lymph occurred (0 to 5 h post dose), essentially equal amounts of the two enantiomers were present in the intestinal lymph. So, there was no evidence of enantioselective drug absorption.

But, later times (e.g. 5 to 12 h post dose), there was a steady increase in the fraction of (+) Hf present in lymph. An increase in the proportion of (+) Hf present in systemic blood, (resulting from enantioselective systemic metabolism) and a corresponding increase in (+) Hf in the thoracic lymph by equilibration of a drug across blood and lymphatic capillaries evident that enantioselective drug metabolism was observed.

The importance of stereochemistry in drug action is gaining greater attention in medical practice, and a basic knowledge of the subject will be necessary for clinicians to make informed decisions regarding the use of single-enantiomer drugs. Familiarity with stereochemistry and its pharmacologic implications will aid the practicing physician to provide optimal pharmacotherapy to his or her patients.

MYCOTOXINS

P.C. Lalawmpuii

Department of Pharmacy, RIPANS

Mizoramah hian cancer vei kan tam zia hi kan sawi fo thin a. Mithiam tam takin cancer vei kan tam chhan an sawi leh ziah pawh kan hre tam tawh em em a. Zuk leh hmuam kan uar lutuk mai bakah kan ei lehin -sarep, saum, be kang leh a dangte vang niin an sawi thin a. Heng bakah hian cancer thlentu kan la hriat lar vak loh chu hmuar (mould) hi a ni ve tlat mai. Pa (mushroom) leh hmuar (mould) te hi Fungus an tih zinga mi an ni a. Heng fungus kan tih te hian chemical chikhat (fungal toxins) an siam chhuak thin a. Heng fungus ho tur siam sang tam tak zingah hian a then te chu mihring tan an tangkai em em a, a then te erawh chu mihring tan hlauhawm tak, natna chi hrang hrang leh thihna hial thlen theitu an ni.



Fungus ho tur hi chi hnihah a then an ni:

MUSHROOM TOXINS - Pa (mushroom) ho tur siam chhuah.

MYCOTOXINS - Hmuar (mould) kan tih ho tur siam chhuah.

MUSHROOM TOXINS:

Pa (mushroom) tur mihring taksaa lut hi chu tihpalh thilthu ni loin keimahni in kan duh thu renga kan ei a ni thin a. Pa te hi ei tur tha tak leh tui tak an nih rual hian fimkhur loh chuan tur pai ei a hlauhawm em em a, thihna hial pawh an thlen thei a ni.

MYCOTOXINS :

Mycotoxin tih chu Greek tawng 'mykes' (fungus) leh Latin tawng 'toxicum' (tur) tih atanga lak a ni. Mycotoxin chu fungus ho zinga hmuar kan tih ho in an tur (toxic chemical) an siam chhuah sawi nan hman a ni. Hmuar kan tihte hi an chi (spores) te

hi a te em em a, khawi hmunah pawh hian hmuh tur an awm a. An mamawh ang lum leh hnawng an hmuh chuan an toin an lo pung thur thur thin a, an tur (mycotoxin) pai pawh a lo tam thin a ni. Hmuar chi hrang hrang ten mycotoxin an siam chhuah hi an to that leh to that loh a zirin mycotoxin an siam chhuah zat a danglam thei hle a. He an tur hi engvanga lo siam nge an nih tih hi a hriat a la ni lova, an than nan leh an puitlin nan a tangkaina hriat a ni hran lo. Heng an tur siamchhuah hi an hmelma laka invennan leh an thanna daltu hmuar chi dang lo to vete tihchhiat nan an hmang niin a zirmite chuan an sawi.

Mycotoxin hlauhawmna:

Mycotoxin-in natna a thlente hi mycotoxicosis tih a ni a. Mycotoxin hi a siamtu hmuar chi a zirin chi hrang tam tak a awm a, an natna thlen hote hi a lan chhuah dan chu a mycotoxin chi a zirin a danglam thin. Tin, kan taksa a luh chung rei zawng te, kum a zir te, a dawngsawng tu taksa a tur lut zat leh an hriselna dinhmun a zirte leh mipa leh hmeichhia a zir ten an thawh dan a danglam thei hle a ni. Mithiamte chuan heng mycotoxin te hian mihring leh ranah natna chi hrang hrang a thlen thei niin an sawi a. Tin, cancer natna thlen theitu chi hrang hrang zinga hlauhawm ber pawl niin an sawi bawk. Mycotoxin te hi kan hriat loh hian kan ei leh in ah a lo tel palh thei a, kan chhena boruak atang hian kan hip lut thei a; tin, kan vunah hian a kai thei bawk a ni. Myc-

otoxin te hi wawi leh khata kan taksa a tam tak a luh thut chuan damloh thutna chi hrang luna, pumna, luak, khawsik, khuh, taksa chau, hrawkna, kawthalo, allergy chi hrang hrang, vun thak, cancer leh natna chi dang tam tak a thlen thei a chutih rualin rei tak chung tlem tlema kan taksa a luh hian cancer a thlen theih mai bakah leh taksa leh rilru than a ti thu thei bawk. Mycotoxin te hi an hlauhawmna em em mai pakhat chu natna hrik anglo tak hian chum emaw leh dah vawh a tih khang pawh hian a tichhe ve lova. Hei vang hian kan ei leh in leh buh leh thlai mai bakah sa leh bawngnhnuteahte leh bawngnhnute atanga thil siam kan eiah te hian mycotoxin an tel chuan kan taksaah hian a ngai ngai in a lut thin.

Mycotoxin tangkaina :

Hmuar chi hi sang tam taka awm mahse mycotoxin an siam chhuah te hi mihring tan an hlauhawm vek kher lova. Thenkhatte chu mihring leh ran tan an tangkai ve leh em em thung a. Mycotoxins thenkhat te hi natna hrik te leh hmuar chidang vek pawhin an haw thei hle a. Entirnan, penicillin kan tih hi mycotoxin chi khat a ni a, bacteria in an huat em em avang hian mihring tan damdawi tangkai tak a ni ve leh thung a. Hetiang bawh hian antibiotics chi hrang hrang hi hmuar chi hrang hrang in mycotoxin an siam chhuah atanga siam an ni. Tin, hmuar kan tih ho zinga thenkhat hi eitur cheese leh zu chi hrang hrang siam nan an hmang thin bawk.

MYCOTOXINS THEN HRANG HRANGTE

1. Aflotoxins: Aspergillus species ten mycotoxin an siam hi Aflotoxins an ti a, eitura eitel palh mai bakah boruakah a then te chu kan hip lut thei a ni. Aflotoxin-te hi an hlauhawm em avang hian zirchian hlauh ber pawl an ni. Aflotoxin te hi chiliah then an ni a - B1, B2, G1 leh G2. Heng zingah hian Aflatoxin B1 hi a hlauhawm ber a ni a, natna hrang bakah cancer thlen theitu a ni a. Ranin aflotoxin kai chaw an ei chuan an taksaah hian aflotoxin M1 leh M2 an siam chhuak thin a, chu chu an zun leh hnuteah te a lo tel thin a ni. Badam, la (cotton), spices leh vaimin leh ah te hian an awm duh zual em em a. Aflotoxin te hi a siam chhuak tu hmuar chi a zirin thin leh chuap cancer te a thlen thei a ni. Asia leh Africa rama thin cancer tam em em nachhan chu heng aflotoxin kai eitur ei tam vang niin scientist te chuan an ngai. Kum 1974 khan India ramah pawh hian vaimin aflotoxin kai ei vangin za tam an dam lo a, mi 106 laiin an thih phah a ni. Kenya ramah pawh kum 2004 khan aflotoxin kai vaimin ei avangin mi 125 in an thih phah bawka, chumaibakah mi tam tak enkawl an ni bawka ni. Aflotoxin level hi ram tam takah chuan control a ni a. Eitur a bawm chi ho hi uluk taka endik thin a ni. A tlangpui chuan eitur awm ngaihnhiam chin hi hmun tluklehdingawna thena hmun 15-20 vel a ni. Chutih laiin scientist thenkhat chuan cancer thlen thei an nih avangin eiturah tel miah lo turin an duh ve thung.

2. Ochratoxin: Penicillium leh Aspergillus species ten mycotoxin an siam chhuah a ni. Chi thumah then a ni - Ochratoxin A, B leh C. Aspergillus ochraceus hi beer leh wine velah te hian a awm duh em em a. Aspergillus carbonarius hi thei zam chiahte hian a awm duh hle a, heng theite hi sawr an nih hian an tur kha an chhuah thin a. Ochratoxin A hi cancer thlen theitu a nih mai bakah kal (kidney) pawh a ti chhe thei a ni.

3. Citrinin: Citrinin hi Penicillium citrinum ah hmuh hmasak ber a ni a, mahse Penicillium species dang dangah pawh hmuh a ni. Penicillium species thenkhat chu cheese, sake, miso leh soya sauce siam nan te an hmang ve thung a. Citrinin hi Japan rama yellow rice diseases thlentu niin rana an enchhinna zawng zawngah chuan an kal a khawih chhia a ni. Buh lam chi hrang hrangah hian awm duh hle a, mihring tan hian engti chiahin nge pawh a thlen tih hriat chian a la ni lo.

4. Ergot alkaloids: Heng mycotoxin-te hi alkaloids inpawlh an ni a Claviceps species te siam chhuah a ni. Grass species chi hrang hrang ah natna thlentu an ni. Rye (chhang phut buh chi khat) ah hian an awm duh em em a. Hetiang ergot alkaloid awmna rye atanga chhang siamte ei chuan ergotism a thlen thin a, hei hi a hmingah chuan St. Anthony's Fire an ti. He mycotoxin hi chi hnihin a thawk a - pakhatah chuan thisen kal vel tibuaiin tisa a titawih, a chi dangah chuan hriatna thazam lam a khawih ve thung. Tun laiah chuan buh lam chiah hian awm

ngai mang tawh mang lo a, a sawisak leh thenfai danin a zir tawh avangin; amaherawhchu, ran ei tur lamah hian a la awm thin. He mycotoxin atang hian damdawi tha tak tak hmeichhe nau neih puitu leh luna chhawkna damdawite an siam chhuak a. Damdawi hman sual lar tak LSD (Lysergic acid diethylamide) pawh hi ergot alkaloid atang a siam chhuah a ni.

5. Patulin: Patulin hi *P. expansum*, *Aspergillus*, *Penicillium*, and *Paecilomyces* species ah te hian hmuh a ni. *P. expansum* te hi a bik takin thei leh thlai chi hrang hrang ti hmuartu an ni. Cancer thlentu chu ani lo nain kan natna do theihna a ti chaklo thei hle a. Um (fermentation) hian a ti chhia a, mahse thei tui lam chiah hi chuan a awm phal zat bithliah a ni. European community chuan 50 ?g/kg thei tui fir ah leh apple atanga eitur siamah 25 ?g/kg a ni a, naupang bikah chuan 10 ?g/kg.

6. Fusarium: *Fusarium* toxin te hi *Fusarium* species 50 chuang zet in an siam thei a ni. Wheat leh vaimin te an bawh duh hle a. *Fusarium* te hi chi hrang ah then leh an niin an zingah hian fumonisin te hian sakawr thazam an khawih chhia a, sazu lamah hian cancer a thlen bawh. An zingah trichothecenes te hi mihring leh ran ah natna thlen tu ber an ni a, a siam chhuak tu hmaurte hi in chhungah hian an awm duh em em a, a bik takin tile leh gypsum board ho ah te hian an awm duh bik a ni. Chi hrang hrang 60 zet hmuh chhuah tawh a ni a.

Hetih rual hian zearalenone te hi chuan khawih pawh an neih em em hriat a ni lo. Chi tam tak zingah hian beauvercin, enniatins, butenolide, equisetin, leh fusarin te hi hriat lar zual zinga mi an ni.

International agencies hrang hrangte hian mycotoxin phalchin (limit) siam hi an buaipui hle a. Khawvel ram hrang hrang 100 zet hian mycotoxin tam lam ran chawa tel thei chin an bithliah a. Mycotoxin tam lam thehna atana an hman ber chu high-performance liquid chromatography (HPLC) a ni. Heng mycotoxin tehna atana an hman tlanglawn ber chu European Committee for Standardization (CEN) in an duan zulzui hian a ni. Eitur a mycotoxin tel hi kum zabi 20 na chhung khan khawvel ram hrang hrangah zir a hlawh hle a. U.S. Food and Drug Administration chuan industry ten eitur leh ran chaw an siama mycotoxin awm theih zat bithliahna dan hi kum 1985 khan an lo duang chhuak tawh a ni.

A tlangpui thuah chuan chhena in, sikul leh office te enkawl that pangngai tak anih chuan mycotoxin awm hi chu hlauhawm lo tawka ngaih a ni. Mizoramah kan thlai tharte hrang hrang behlawi, hmarcha, baibing leh a dang tam tak kan rep nasa em em a, hengte hi kan dahro that loh chuan a lo hmuar uarh thin a. Heng bakah hian vaimin, badam, chhawhchi leh sarep te pawh dah that an nih loh chuan an hmuar duh em em a. Hmuarin tur an siamte hi natna hrik anga chhum thih ve mai theih an nih loh

avangin hmuarin a bawm tawh chu eiloh hram kan tum tur a ni. Tun kan dinhmunah chuan kan eiturte hi a him leh him loh han test zung zung thei kan nih loh avang hian kan fimkhur tlan a ngai hle a. Kan lo hrisel zawk nan ei leh in tur

eng pawh hmuarin a bawm tawh reng reng chu ei lo ila, boruak atang pawha a hip luh leh zel theih avangin kan inchhung pawh fai taka vawngin, hmuar to theilo turin kan ti hul thain hnawng lo thei ang berin kan siam tur a ni.

FAKNA AVANGIN BUMIN AWM SUH

Lalhmingliana

Nula pakhat chu hmeichhe lam that lohna chi hrang hrang a nei a, a chhungte leh a thian te hnenah pawh chu a harsatna chu a hrilh ngam mai lo a. tukkhat chu nitin chanchinbu a chhiarna ah chutianglam natna ti dam thei leh a damdawi a awm thu chu a chhiar fuh hlauh mai hmun hrang hrang a pan a a beidawn ruk em em tawh lai a chutiang fakna an hmu chu beiseina sang tak nen a phone number ah chuan an phone ta a, appointment te siam in chupa inentirna hmunah chuan a kal ta a.. chu pa chuan damdawi eng eng emaw alo chawh a; kal leh tur in a lo rawn bawk a, beiseina nen thu awih lo ngam tawh si lo in a pan ta zel a.. a tawp ah chuan sum tam tak a hloh bak ah a thianghlimna hial pawh a hloh phah ta hial a ni.

Sakawrdaia damdawi dawr pakhatat chuan Malaria-a damlote chu a piah lawk sorkar damdawiina inzawn lut ta lo chuan, chu dawrah chuan inentir turin an inzawn lut fo a ni tih ka hria a. A chhan ka'n zawh chuan, chu dawr neitu pa chuan microscope kawlin mite hnenah chuan malaria hrik no hruai lai pawh a hmuh theih thu a lo sawi thin a. Chu a infakna chuan mi tam tak thilungah malaria natna enkawl dam thei hle turah a ngaihtir a. A damdawi chawhte kan han en chuan, malaria damdawi, hospital chauhva hman chite a lo pe ve mai chauh a ni si a. Heng thil hian harsatna mipuiah leh khawtlangah a thlen nasa thei em em a ni. Sum leh pai hlohna leh chhiat

lehzualna thlen thei a nih avangin kan fimkhur a tul hle.

Mizoramah eng emaw lai khan Ayurvedic damdawi, Paurus Jeevan kan ei nasa em em a, tinreng damdawi ang maiin leh intihthau nan te kan hmang a, tha hlein kan hria a ni. Chutih laiin, he damdawi hi Kerala Drugs Control Department -te chuan synthetic steroid an pawlh a ni tih an hmuhchhua a Case siamsakin Kerala Chief Judicial Magistrate chuan a siamtu Company Dev Pharmacy chu thiamloh chantirin hremna natak a pe hial a ni He damdawi hi doctor leh mithiam te enkawl na hnuaiah lo chuan ei mai mai a hlauhawm em em a ni.

Kan ramah hetiang a faknain a tihbuai kan tam em em a, mar dek thiam, tawngtai dam thei ti sia damdawi chi hrang hrang chawh tlat te, damdawi lam tlem azawng hre ve a, inti-doctor tlat te, certificate sorkar-in a pawmpui ni lem lo hmanga damlo lo enkawl ve tlat te, kan kat ta nukin heng lakah hian kan fimkhur a tul em em a ni. A lo thlawna sum senna leh taksa hriselna tichhe zual thei a ni tih kan hriat reng a tha awm e.

Heng fakna te hi Mizoram chanchinbu ngei a chhuak te an ni:

Damdawi Tha (Mizo Arsi 14.6.95): Japan leh China te thiamna atanga siamchhuah Damdawi Tha, hospital thlen ngai lova dam mai theih a ni - Khawsikpui, Malaria, Hmeichhe natna, TB, Cancer, Zunthlum, Thahruina, etc.

Saiekhlo Damdawi (Vanglaini 4.4.03): Zunthlum, Pumna, Zunkawng tihfai nan a tha.

Mipa leh Hmeichhe tana tha (Mizo Aw 27.1.03): Sex lama chak lo mipa leh hmeichhe tana ei chi Spanishfly kan chah thleng thar, side effect a nei lo.

Damdawi fak hlawh (Mizo Aw 4.2.03): Hmeichhe lam that lohna tinreng damdawi 'HER' pawh a ei tawh chuan an fak. Damna ni baw k si, man tlawm baw k si.

Natna benvawn neite tan (Vanglaini 15.7.03): Tunlai thiamna danglam tak (Drugless treatment of chronic diseases with digital Clinical Magnetology)

Bawngkawnah hawn a ni a, mi tam takin an dampui mek. Hengte tan pan theih reng kan ni - Hriatna thazam fel lo, Thawkna dawt lam tha lo, Endocrine, Zunthlum, Rilru lam natna, etc.

Zunthlum damna tur hmuhchhuah thar (Vanglaini 19.1.04): Diabetic Guard: Zunthlum natna 83% a hlawhtlingin a titem thei.

An pan chur chur mai (Vanglaini 31.8.04): Mizo damdawi Kaihzawl hnahsin (Kaihzawl pa) ngei hian i natna tidam ve rawh. Sang tam tak an dam tawh - Ulcer, Santen benvawn, Kalna, Thisen sang, Zunkawng tha lo, etc

Damdawi Tha (Lelte): Cancer chemo khai chau lutuk pumpelhna damdawi leh chaw tha a awm e. Arthritis (Ruhseh) damdawi tha ber chi pawh a awm a. Mi tam takin dam nan an hmang tawh. Thau lutuk intihcherna pawh kan nei.

Good News (Aizawl Post 17.7.04): India's highest selling medicine to prevent pregnancy. Use 'Today-Tab' Just one vaginal tablet to be inserted minutes before any physical relation.

Serh Natna (Vanglaini 3.8.04): Chi tla hma lutuk, serh zawi, te lutuk leh zun zawnga serh nate leh a dangte, mipa natna rûk te hi darkar 20 hnua a thatna lang chhuak nghal a, 100%-a a natna dam nghal hmiah i duh chuan he damdawi tha 'Linga Bardhak Yantra' Rs.680/- in lei theih rengin a awm e.

Serh natna (Vanglaini 17.7.06): Serh natna, chi tla hma lutuk, Syphilis, serh

te leh zawi, zun zawnga na leh a dangte hi 100%-in a dam kan tiam che.

Hnute nalh nan (Vanglaini 17.7.06):

Ni 28 chhung leka i hnute a lo nalh a, a lo mawi theih nan kan Ayurvedic treatment hi hmang ang che.

DXN Damdawi (Vanglaini 20.9.07):

Natna hrang hrang, a bikin Cancer, Zunthlum, Ulcer, Hepatitis, Kal, Lung, Sinus, Epilepsy, Thisen sang/hniam, Ruhseh, etc. veite tan Ayurvedic damdawi - Pá (mushroom) atanga siam a awm e.

Mizoram mipuite hriattirna Dr. Rualpawla (Allopathy&Alternative Medicines):

Tunlai Mizorama natna tam ber- Kal, Mit, Zunkawnga lungte awm leh hnaila, sum tamtak senga zai, chhutkeh, verh ngai lovin mi sangthum dawn lai kan enkawl dam tawh. Tin, pumpui ulcer, thana, vung, nizung natna, hmeichhe natna leh natna chi hrang hrang Mizoram leh phai lam Damdawiin hrang hranga beidawng tawh te pawh mi tam tak kan enkawl dam tawh bawk.

Heng lo pawh hi waviin thleng hian kan chanchinbu ah he dan kalh a fakna chhuah hi a la awm reng mai. Kan sawrkar hian hetiang a thatna tak tak hriat chian loh leh dan in a khap tlat infakmawina te hi, khuahkhirh nasat a va ngai em?!! mi tam tak hruaisual leh bum in an awm mek a ni si a.

India sorkar chuan heng laka kan fihlim theihna tur hian dan, 'Drugs & Magic Remedies (Objectionable Advertisement) Act'1954 a siam a. He danah

hian famkim tawk lohna lai tam tak awm mah se, fakna him tawk lo khuahkhirhna atan chuan a tha tawk rih hle tho a ni.

He danah hian natna chi hrang hrang tarlan bikte chu, tidam hmiah thei anga infak a khap tlat a, damdawi hleihluak taka fak leh mi hruai sual thei zawnga fak mawi a khuahklhrih tlat a ni. Tin, mipuite damdawi laka kan him zawk nan mahnia damdawi inchawh chawp leh ei mai mai ven nana he dan hi siam a ni.

Fakna tih hian hriattirna (notice), sawifiahna leh bungraw tuamnaa bungraw chanchin ziahlan te, heng fakna thute hi tawngka emaw, eng (light) emaw, ri leh meikhu hmang emaw tea puandarh leh tarlan te a huam vek a ni. Heng fakmawinaa inhnawih thei thil- a siam chhuahna khawl te, a siam chhuaktu te leh hmanraw dang dang te a huam thei vek baw a ni. He dana fakna a khap tlat a awm a, chungte chu hmeichhe lam that lohna, nau chhiat, nau neih chungchang, thi neih chungchang lama harsatna te, tidam hmiah theih ang zawnga infak mawi chu he dan Section 3(i)-ah khap tlat a ni.

Mipat hmeichhiatna, nupa nuna chak lohna hrang hrang awmte tichak thei leh tidam thei anga infak mawi chu he dan Section 3(ii) hian a khap tlat a ni.

He dan buin a tarlan bik natna chi hrang hrang natnate- chu natna hmuhchhuah, tihdam hmiah, natna laka inven enkawl, ti thei anga infak mawi chu he dan Section 3(iii)-in a khap tlat a ni.

Hetih lai hian he danina a huam loh fakna eng emaw zat fakna/sawifiahna a awm a, chungte chu naupai indanna lam fakna, naupai danna damdawi fakna leh mithiamte thu leh hla ziahna Journal/lehkhabu/magazine-a mi chu a huam lo va ni. Tin, sorkar-in fakna a siamte leh a bik taka doctor-te chhiar tura siam leh thawn te pawh a huam lo bawk a ni.

He dan hnuai infak mawi a khap hote leh fakna dik lova inhnawnawihthe reng reng chu thla ruk thleng lung-in tan leh pawisa chawia hrem theih an ni a, an tisial nawn leh a nih chuan kum khat thleng lung-in tan leh pawisa chawia hrem theih an ni.

Mizoramah pawh he dan kengkawh tur leh khuahkhirhnaa hma la turin Mizoram sorkar chuan ni 4, April,

2003 khan State Level Monitoring Cell a lo din tawh a, chung a member-te chu Chairman - Director, H&FW, Member Secretary - Asst. Drug Controller, Member - DI Hqrs, DI District, Representative of I&PR Deptt, Representative of Mizoram Journalist Association te an ni a

Hetianga dik lo taka infakmawina avang hian mi tam tak chuan a lo thlawnin sum leh pai tam tak an seng a, an hriselna that phah chuang lovin, a thente pheih chu chhiat leh zualnaah an inhnawh luh phah hial thin a ni. Heng kawngah hian mipuite kan fimkhur a tulin kan inentir hma leh sum kan sen hmain chiang taka a dinhmun mithiamte zawh hmasak thin hi a him fo a ni.

DRUGS INTERACTION AND ADVERSE REACTIONS

ANTI-MICROBIAL DRUGS

1. PENICILLINS

Eg: 1) Benzyl Penicillin (Penicillin G)

2) Procaine Penicillin

3) Benzathine Penicillin

4) Phenoxymethyl Penicillin (Penicillin V)

(a) Allupurinol nena pek kawpin vun durh a thlen thei.

(b) Neomycin nena ei kawpin Penicillin-V hnathawh a titem thei.

(c) Methotrexate nena ei kawpin methotrexate excretion a tihniam, chu chuan methotrexate toxicity a tisang.

(d) Guar Gum hian Penicillin-V absorbtion a titem.

(e) Oral Contraceptive-te nena pek kawp hian Contraceptive-te hnathawh a titem.

(f) Probenecid hian Penicillin excretion a titema, toxicity a tihniam thei.

2. MACROLIDES ANTIBIOTICS

Eg: a) Azithromycin

b) Erythromycin & its derivatives

c) Clarithromycin

d) Roxythromycin

1) Digoxin leh Cyclosporins derivative te absorbtion a tisang thut thei.

2) Triazolam, Carbamazepine leh Phenytoin te hnathawh a tisang.

3) Terfenadine metabolism a block thei a, hei hian arrhythmia te a thlen thei bawk. Hman kawp loh hrim hrim tur.

4) Bromocriptine leh Cabergoline Concentration taksaah a tisang vak thei.

5) Ergotamine leh Ergometrine te nena hman kawp a nih chuan Ergotism an thlen nghal thin. Hman kawp loh tur.

- 6) Itraconazole concentration an tisang thei.
 - 7) Clarithromycin leh Erythromycin te hian Pimozide te nena pek kawp chuan Arrhythmia an thlen thei a. Erythromycin bik hi Clozapine nena pek kawp chuan Convulsion an thlen thei a ni.
 - 8) Antivirals (Zidovudine, Ritonavir) te absorption an tihniam thei a, hei hian antiviral te side effect an tisang thei.
 - 9) Midazolam hi Erythromycin leh Clarithromycin ten a metabolism an tihniam taksa concentration an tisang thin a, hei hian zawina namen lo (profound sedation) a thlen thei a ni.
 - 10) Erythromycin bik hian methylprednisolone leh a dang corticosteroid te concentration a tisang.
 - 11) Cimetidine in Erythromycin Concentration taksaah a tisang a, chu chuan Erythromycin toxicity a tisang.
 - 12) Anti-Congulants hnathawh an tichak a, thipût hial a thlen thei.
 - 13) Antidepressant damdawi pakhat reboxetine siam te chuan hman kawp loh turin thurawn an pe.
 - 14) Ergotamine nena hman kawpin artery a affect thei a, chu chuan Ischemia a thlen hial thei.
3. CEFADROXIL (Cephalosporin antimicrobial)
- 1) Furosemide nena hman kawp hian nephrotoxicity a thlen hma bik.
 - 2) Anti-coagulants (eg: Warfarin, etc) te hnathawh a tichak a, thipût a thlen hial thei.
 - 3) Ulcer damdawi H₂- receptor antagonists (eg Cimetidine, Ranitidine) te hian Cefadroxil absorption an tihniam a, a toxicity a tisang.
 - 4) Probenecid-in taksa atanga excretion a tihniam a, Cefadroxil toxicity a tisang.
4. CEFOTAXIME (Third Generation Cephalosporin)
- 1) Aminoglycosides (eg: Streptomycin, Kanamycin, Gentamicin, Tobramycin, etc) ten a hnathawh (action) an tichak.
 - 2) Loop Diuretic (Frusemide) ten nephrotoxicity an tisang thei.
 - 3) Probenecid hian a excretion a tihniam a, a toxicity a tisang.
Special precaution: Hengte hnenah hian pek loh ni se – Kal (kidney) lam tha lo, raipuar leh nu hnute tui pe lai.
5. CEPHALEXIN (First generation Cephalosporin)
- 1) Aminoglycoside (Streptomycin, Kanamycin, etc) ten a hnathawh an tichak.

- 2) Probenecid hian excretion a tihnam a, a toxicity a tisang.
- 3) Loop Diuretics (Frusemide) ten nephrotoxicity an tisang thei.

6. CHLORAMPHENICOL

- a) Rifampicin hian metabolism a tichak a, ei pawhin a hnathawh a tinep.
- b) Warfarin hnathawh a tichak a, thipût a thlentir hial thei.
- c) Paracetamol hian Chloramphenicol metabolism a tibuai thei a, a toxicity a tisang bawk.
- d) Mannitol leh Hydrochlorthiazide te hian Chloramphenicol excretion an tichak a, a hnathawh an tihnam.
- e) Phenibarbital hian Chloramphenicol plasma concentration a tihnam.
- f) Penicillin-te hnathawh an tichak lo thei.
- g) Amitriptyline, Imipramine, Desipramine te toxicity a san phahin an adverse effect a tisang thei.

Special Precaution: Nu, rai lai leh hnute pe laiah pek loh nise.

7. CO-TRIM OXAZOLE

- a) Pyrimethamine nena pek kawp hian megaloblastic anaemia an thlen thei.
- b) Warfarin nena pek kawpin Warfarin hnathawh a tisang a, thipût hial a thlen thei.
- c) Cyclosporins nena pek kawpin nephrotoxicity a siam thei a, renal transplantation lo ti tawhte phe chu pek hauh loh tur.
- d) Oral Contraceptive nena pekin Contraceptive hnathawh kha a titawp thei.
- e) Amiodarone nena pek kawp hian arrhythmia a thlen thei.
- f) Phenytoin plasma Concentration a tisang thei.
- g) Methotrexate nena pek kawpin anti-folate effect a tisang thei.

Special Precaution: Naupai lai leh kum upa lamah te a theih chuan prescribe loh nise.

8. TETRACYCLINE

- a) Penicillin activity a tichak lo thei.
- b) Antacid-te nena pek kawpin Tetracycline absorption a hniam thei.
- c) Phenindione (anti-coagulants)-in Tetracycline hnathawh a tichak lo.
- d) Anti-epileptic (Carbamazepine, Phenobarbital, Phenytoin) te hian tetracycline metabolism an tichak a, a hnathawh an titem.
- e) Calcium, Aluminium, Iron te hian Tetracycline nen complex an siam a, an hnathawh an intichak lo tawn emaw, hnathawh thei lovin an insiam thei.

- f) Cyclosporin plasma concentration an tisang thut thei.
- g) Ergotamine leh Ergometrine te tetracycline nena pek kawpin Ergotism an thlen hma bik.
- h) Oral Contraceptive nena ei kawp hian Contraceptive hnathawh an tichak lo thei.
- i) Sucralfate hian Tetracycline absorption a tihniam thei.
Special Precaution: Nu, naupai laia pekin nau thang lai ruh insiam a tichhe thei a, ha eng a thlen thei bawk.

14. NORFLOXACIN

- a) Cyclosporin emaw, theophylline emaw nena hman kawpin taksaa an level a tisang thut thei.
- b) Warfarin hnathawh a tisang thut thei.
- c) Probenecid nena hmankawpin Norfloxacin excretion a titem.
- d) Antacid nena hmankawpin Norfloxacin absorption a titem.

ANTI-MALARIAL

1. CHLOROQUINE

- a) Antacid-in Chloroquine absorption an titem thei.
- b) Amiodarone nena hman kawpin ventricular arrhythmia a thlen thei a, hman kawp loh tur.
- c) Malaria damdawi tho Mefloquine nena hman kawpin Convulsion a thlen thei.
- d) Digoxin plasma concentration a tisang thei.
- e) Cyclosporin nena hman kawp hian Cyclosporin toxicity a tisang bik.
- f) Cimetidine nena hman kawp hian Chloroquine metabolism a timuang thei, hei vang hian darkar 4 tala inhlata pek (administer) tur a ni.
- g) Quinacrine nena hman pawlhin vunah allergy a thlen thei.
- h) Phenylbutazone nena hman pawlhin vunah allergy a thlen thei.
- i) Pyridostigmine emaw, Neostigmine nena hman pawlhin an hnathawh an intichhe tawn (antagonise) thin.
Special Precaution: Naupai, nu nau hnutetui pelai, thin lam leh kal lam na (hepatic/renal impairment), Kaih/Phungzawl ching leh naupangah hman loh tur.

2. PRIMAQUINE

- a) Mepacrine nena hman pawlhin Primaquine plasma concentration a sang thut a, a toxicity a tizual.

- b) Chloroquine metabolism a dang thei.
- c) Sulfonamides, Nitrofurans, Methotrexate, Phenylbutazone leh Chloramphenicol te nen hman pawlh hauh loh tur.

3. MEFLOQUINE

- a) Chloroquine leh Quinine nena hman pawlh in Convulsion an thlen thei a. (Case pawimawh bikah chuan Supervise-na nen Quinine IV an pe tel bawk).
- b) Calcium Channel blocker (Verapamil) nena hman pawlh in thinphu an timuang (Bradycardia) thei.
- c) Pimozide nena hman pawlh hian Ventricular arrhythmia an thlen thei.
- d) Digoxin nena hman pawlh in thinphu an timuang thei (Bradycardia).

4. QUININE

- a) Digoxin toxicity a tisang vak thei.
- b) Warfarin action a tichak thei.
- c) Cimetidine-in a Quinine metabolism a tihnam thei.
- d) Pimozide, Amiodarine, Terfenadine hman pawlh in ventricular arrhythmia a thlen sam bik. Hman pawlh loh hrim hrim tur.

5. ARTESUNATE

- a) Tetracycline nena hman pawlh hian anti-malarial properties a tichak nia hriat a ni.
- b) Mefloquine leh Primaquine nena hman pawlh in a hnathawh a tichak.
- c) Sulfonamides leh Pyrimethamine te nen an hnathawh an intichhe tawn.

CONTRACEPTIVE ORAL

(Progestogen, Oestrogens, Combined Oestrogens and Progestogens)

- a) Rifampicin hian Combined oral contraceptives leh Progesteron metabolism a tichakin an contraceptive effect a titlem.
- b) Ampicillin, Tetracycline te hian Combined oral contraceptive effect a titlem thei.
- c) Warfarin, Acenocimarol leh Phenindione te nen an hnathawh an intichhe tawn (antagonism).
- d) Tricyclic antidepressant (Imipramine, Amitriptyline etc) te side effect a thlen rang bik.
- e) Antiepileptic (Carbamazepine, Oxcarbazepine, Phenobarbital, Phenytoin, primidone leh topiramate) te metabolism an tichak a, Combined leh

Progesterone chauh tel Oral Contraceptive te hnathawh an titem thei bawk.

- f) Fluconazole, Itraconazole, Ketoconazole te hi oral Contraceptive nena hman pawlhin Contraceptive hnathawh an tibo (failure) thei.
- g) Oral Contraceptive leh anti-hypertensive te hman pawlh hian anti-hypertensive hnathawh a tithuanawp thei.
- h) Oral Contraceptive te hian Cyclosporin Plasma Concentration an tisang a, Cyclosporin Side effect an tisang thei.
- i) Lansoprazole hian Oral Contraceptive te metabolism a tichak a, an hnathawh a titem thei.
- j) Diuretic te hnathawh hi Combined oral contraceptive ho hian a tichhe (antagonise) thei.

ANTI-ALLERGIC DRUGS

1. CETIRIZINE

- a) Zu (Alcohol) nena hman kawpin CNS depression a tizual vak thei. Adverse effect: Luna (headache), luhai, zawina, kam chung ro, pum nuam lo te a thlen thei a, naupai lai leh hnathawk mental alertness ngai chite pek loh tur. Kal lam tha lo tan a hlauhawm zual bik.

2. CHLORPHENIRAMINE MALEATE

- a) Zu (alcohol) nena hman kawpin a sedative action a tizual vak thei.
- b) Psychotropic drugs (eg: Chlorpromazine, reserpine, haloperidol) te nena hman kawp hian mi a tichau vak thei.

3. DIPHENHYDRAMINE

- a) Zu nena hman kawpin CNS depression a tizual vak thei.
- b) Barbiturate te nena hman kawpin CNS depression a sang vak thei a, damlo chau tawhte chuan an chhiatpui hlen thei.
- c) MAO Inhibitors (Phenelzine, Isocarboxazide), Atropine te, Amitriptyline te nena hman pawlh hian anti-muscarinic action a tisang vak thei.
- d) Amphotericine, hydrocortisone leh sodium succinate te nen a inhal thei.

4. FEXOFENADINE

- a) Zu nena hman kawpin mi a tichau thei.
- b) Antacid nena hman kawpin Fexofenadine absorption a tihniam thei.
- c) Ketoconazole emaw, erythromycin emaw nena hman kawp hian taksa a Fexofenadine plasma level a tisang thei.

5. PHENIRAMINE MALEATE

- a) Zu nena hman kawp hian mi a tichau vak thei.
- b) Barbiturate te nena hman kawpin mi a tichau thei bawk.
- c) Phenelzine, Isocarboxazide, Iproniazid, Atropine, Amitriptyline te nena hman kawpin anti-muscarinic effect a tisang thut thei.
- d) Aminoglycoside antibiotics te nena hman pawlhin toxicity effect a tihnam.

6. PROMETHAZINE

- a) Zu, Barbiturate leh Opioid analgesic te nena hman kawpin mi a tichau vak thei.
- b) Aminoglycoside antibiotics te nena hman pawlhin Ototoxicity a tihnam.
- c) Hydroxyzine-in a hnathawh a tihnam thei.
- d) Pethidine te na chhawk theihna a tihnam.
- e) Chloramphenicol, Phenobarbital, hydrocortisone, thiopental leh heparin te nen incompatible an ni a, hman kawp loh a him ber.
- f) Chlorthiazide, Aminophylline te nen precipitation an siam thei.

7. TERFENADINE

- a) Grape juice te nen ei kawp loh tur, terfenadine level taksaah a tisang thut thei.
- b) Zu nena ei kawpin mi a tichau thei.
- c) Amiodarone nena ei kawpin Anti-arrhythmia a thlen thei.
- d) Clarithromycin leh Erythromycin te hian Terfenadine metabolism an tidanglam thei. (A ei emaw, hnawih topical preparation pawh hman kawp loh hrim hrim tur)
- e) Imidazole leh Triazole te nen hman pawlh loh tur.
- f) Quinine nena hman pawlh hian ventricular arrhythmia a thlen thei.
- g) Sotalol nena hman kawp hian Ventricular arrhythmia a thlen thei.
- h) Diuretic ho nena hman pawlh hian hypokalemia an thlen nasa bik a, Ventricular arrhythmia an thlen thei bawk.

ANTI-TUSSIVES

1. CODEINE PHOSPHATE

- a) CNS depressant dangte leh zu nena pek kawp hauh loh tur a ni, mi a tichau vak thei.

2. DEXTROMETHORPHAN

- a) Phenelzine nena hman kawp hian hypotension a siam a, Coma hial a thlen thei.

3. EPHEDRINE

- a) Phenelzine, Isocarbazide te nena hman pawlhin blood pressure a tisang thut thei a, hei hian B.P. hniamin zui lehin taksa tan a hlauhawm thei.
- b) Adrenergic neurone blockers (eg Guanethedine) nena pek pawlhin hypertension a siam thei.

NSAIDS

1. ANALGIAN

- 1) Naupang (nausen) thla 3 aia tlem/kg 5 aia zângah pek loh tur.
- 2) Cyclosporin level a tihniam thei.

Adverse effect:

- 1) Agranulocytosis (a symptom complex characterized by a marked decrease in the number of granulocytes and by lesions of the throat, and other mucous membranes of the gastrointestinal and of the skin.
- 2) Rapid injection-ah B.P. a tihniam thut thei.
- 3) Pum lam natna (gastric symptoms) a thlen thei.
- 4) Hypersensitivity (Skin etc) a thlen thei.

2. ASPIRIN (Acetylsalicylic Acid)

- 1) ACE inhibitors (eg: Captopril, Ramipril, Lisinopril, etc) te hian Aspirin (in doses over 300 mg daily) nena hman pawlhin renal impairment a thlen thei a, chu chuan ACE inhibitors te hnathawh (hypotensive effect) te a tibo thei.
- 2) Kaolin (absorbents) hian Aspirin Absorption a tihniam thei.
- 3) Ibuprofen hian aspirin antiplatelet effect a tihniam thei.
- 4) Angiotensin Receptor Antagonists (eg: Saralasin, Losartan, etc) te hi aspirin (in doses over 300 mg daily) nena pekin renal impairment a thlen thei a, hypotensive effect pawh a tibo thei.
- 5) Anti conglulants (Coumarins, Warfarin, Phenindione) te effect hi Aspirin-in a tichak sawt thei (Increased risk of bleeding due to antiplatelet effect).
- 6) Antidepressants (eg: Venlafaxine, fluoxetine, citalopram, etc) te hi Aspirin nena pek kawpin thisen khang hun a titlai a, thisen chhuak a tawp lawk thei lo thin.

- 7) Aspirin hian Antiepileptics (eg: Phenytoin, Valproate, etc) te hnathawh a tichak sawt.
- 8) Aspirin te hian methotrexate (anti- cancer drug) te taksa atanga paihchhuah (excretion) a titem a, chuvangin risk of toxicity a tisang sawt.
- 9) Aspirin hian diuretics (eg Spironolactone) te hnathawh a tibo vek thei.
- 10) Aspirin hian Probenecid (antigout i.e. ruhseh chi khat damdawi) hnathawh a tibo vek thei.
- 11) Zu (alcohol) hian Gastric ulceration a thlen hma.
- 12) Metoclopramide (antiemetics) hian Aspirin level a tisang thei.
Side effect: Ulceration bleeding, gastric erosion, urticaria (vun thak, bawl, durh leh vual chi hrang hrang/ei sual/ huat). Rhinitis (hnarkaw-na), Prolonged bleeding time (thikhang har), epigastric discomfort (dul chung pangti na, awm tinuam lo)
Instruction: Pum ruak loa ei tur.

3. PARACETAMOL

- 1) Paracetamol hian zu ngawlveiah hian thin a tichhe hma em em bik a ni.
- 2) Anticoagulants ho hnathawh a tichak sawt thei (eg; Coumarins).
- 3) Paracetamol hian Cancer damdawi chi khat Busulfan (Intravenous) hnathawh tur a timumal lo.
- 4) Domperidone (antiemetics, anti-nauseants, anti-ulcers) hian Paracetamol absorption a tichak sawt.
- 5) Colestyramine (Lipid regulating drugs) te hian Paracetamol absorption a timuang sawt.
- 6) Metoclopramide hian Paracetamol absorption a tichak sawt thei.
- 7) Pethidine, Propantheline te hian Paracetamol absorption a tihniam sawt.
Adverse effects:
Paracetamol hian khawsik, neutropenia (thisen var (WBC) zinga group pakhat a titem) thrombocytopenia (platelet (thisen tikhangtu) tlem vanga thi chhuak /pût/khang/khar thei lo) anaemia (taksa a thisen tam tawk lohna) a thlen thei.

4. DICLOFENAC

- a) ACE inhibitors (eg: Captopril, Ramipril, Lisinopril, etc) te hian diclofenac (in doses over 300 mg daily) nena hman pawlhin renal impairment a thlen thei a, chu chuan ACE inhibitors te hnathawh (hypotensive effect) te a tibo thei.
- b) Quinolones nena pekin Diclofenac hian convulsion (kaih) a thlen thei.

- c) Diclofenac hian Clonidine, Diazoxide, Hydralazine, Minoxidil, Nitroprusside methyl dopa, Nitrates (thisen sang damdawi) hnathawh a tibo vek thei.
- d) Diclofenac hian anticoagulant (coumarins) hnathawh a tichak sawt thei, mahse risk of bleeding a tisang thei hle.
- e) Phenindione nen hian diclofenac (Intravenous) hi pek kawp theih a ni lo a, a chhan chu risk of haemorrhage a sang thei a ni.
- f) Cylosporin hian diclofenac plasma cancer a tisang thei.
- g) Cancer damdawi (methotrexate) risk of toxicity hi Diclofenac hian a tisang sawt thei.
- h) Diclofenac hi Sibutramine nena pek hian risk of bleeding a tisang sawt thei.

5. IBUPROFEN

- a) ACE inhibitors (eg: Captopril, Ramipril, Lisinopril, etc) te hian Ibuprofen (in doses over 300 mg daily) nena hman pawlhin renal impairment a thlen thei a, chu chuan ACE inhibitors te hnathawh (hypotensive effect) te a tibo thei.
- b) Diclofenac hian thisen sang damdawi (Clonidine, Diazoxide, Hydralazine, Minoxidil, Nitro-prusside methyl dopa, Nitrates) hnathawh a tibo vek thei.
- c) Diclofenac hian anticoagulant (coumarins) hnathawh a tichak sawt thei, mahse risk of bleeding a tisang thei hle.
- d) Ibuprofen hi Tacrolimus nena pek kawpin risk of nephrotoxicity a sang sawt thei.
- e) Cylosporin hian diclofenac plasma cancer a tisang thei.
- f) Lithium nena pek kawpin Ibuprofen hian risk of Lithium toxicity a tisang thei. (Due to de-creased in lithium excretion)
- g) Mifepristone (abortifacient) hi Ibuprofen (or any NSAID) nen eikawp loh tur.
- h) Diuretics nena pek kawpin risk of nephrotoxicity a tisang thei.
- i) Aspirin leh Ibuprofen pek kawp loh tur, a chhan chu aspirin hian Ibuprofen thisena a binding site atangin a luahlan thei a ni.

6. NIMESULIDE

- a) Nimesulide hian methotrexate (anti-cancer drug) hi taksaa a binding site atangin a luahlan (displace) thei a ni.
- b) Nimesulide hian diuretics (i.e. Frusemide) hnathawh a titem sawt.

- c) Fenofibrate (Lipid regulating drugs), salicylic acid, valproic acid (anti epileptic drug) te hian Nimesulide hnathawh an tichak thei.
- d) Theophylline (Bronchodilator) hi Nimesulide nena pek kawpin Theophylline hnathawh tur ang a titem sawt thin.

7. MEFENAMIC ACID

- a) Mefenamic acid hian anticoagulants (eg: Coumarins) te hnathawh a tichak sawt thei.
- b) Mefenamic acid hi corticosteroids nena pek kawpin gastro-intestinal bleeding leh ulceration a titam sawt thei a ni.
- c) Antidepressants (eg: Venlafaxine) leh Mefenamic acid pek kawp hian risk of bleeding a sang sawt thei.
- d) Antihypertensive drugs (clonidine, hydralazine, minoxidil, nitroprusside, diazoxide, calcium-channel blockers) te hnathawh hi mefenamic acid hian a tibo vek thei a ni.
- e) Mefenamic acid te hian Lithium taksa atanga paih chhuah (excretion) a timuang a, taksaak Lithium a chhek khawm thei a, risk of toxicity a sang sawt thin.

8. MORPHINE

- a) Zu nena pek kawpin Morphine hian nasa zawkin hna a thawk thei.
- b) MAO Inhibitors (eg Phenelzine, Tranylcypromine, Isocarboxazide) te hian Morphine hnathawh an tichak sawt thei.
- d) CNS depressants (Imipramine Doxepin, Amitriptyline) te hian Morphine hnathawh an pui thei.
- e) Ulcer healing Drugs (eg Cimetidine) te hian Morphine metabolism an inhibit thei a ni.
- f) Diuretics hnathawh Morphine hian a tibo vek thei.

ANTI-ULCER (Ulcer healing drugs)

1. CIMETIDINE

- a) Cimetidine hian Analgesics (azapropazone) plasma concentration hi a tisang thei.
- b) Cimetidine hian Opioid analgesics (e:g Morphine, Pethidine, etc) te plasma concentration a tisang vak thei.
- c) Cimetidine hian amiodarone, procainamide, propafenone, quinidine, flecainide, Lidocaine te plasma concentration nasa takin a tisang thei.

- d) Cimetidine hian taksain Cefpodoxine a lo hman tangkaina (absorption) a tihnam.
 - e) Cimetidine hian Ecythromycin, metronidazole te plasma concentration a tisang thei.
 - f) Cimetidine hnathawh hi Rifampicin hian a titem sawt thei.
 - g) Cimetidine hian anticongulant (coumarins) te hnathawh a tichak sawt thin.
 - h) Cimetidine hian antidepressants (mirtazapine, sertraline, amitriptyline, doxepin, Imipramine, nortriptyline, miclobenide, tricyclics) te plasma concentration a tisang sawt thei a ni.
 - i) Cimetidine hian metformin leh Sulphonylureas te hnathawh nasa takin a tichak thei.
 - j) Cimetidine hian Carbamazepine, Phenytoin, Valproate (antiepileptics) te hnathawh a pui thei.
 - k) Cimetidine hian chloroquine, hydroxychloroquine leh quinine te hnathawh a tichak sawt thei.
 - l) Antipsychotics (Chlorpromazine, clozapine) te hi cimetidine nena pek kawpin an thawk chak sawt thei.
 - m) Sertindole leh Cimetidine pek kawp hian Ventricular arrhythmias nasa takin a thlentir thei a, chuvangin pek kawp loh tur.
 - n) Antivirals (eg: amprenavir, zalcitabine) te hian cimetidine hnathawh an tichak sawt.
 - o) Anxiolytics & Hypnotics (Benzodiazepines, Clomethiazole, Zaleplon te hnathawh hi cimetidine hian a tichak zual thei.
 - p) Ergotamine leh methylsergide te hi cimetidine nen pek kawp loh tur, pek kawp chuan ergotism a thlen thei.
2. OMEPRAZOLE/LANSOPRAZOLE/PANTOPRAZOLE
- a) Omeprazole leh Lansoprazole te hian Cilostazol (peripheral & cerebral vasodilators) plasma concentration a tisang thei a, chuvangin risk of toxicity a san theih avangin eikawp loh tur a ni.
 - b) Valdecoxib (NSAID) hian Omeprazole hnathawh a tichak sawt thei.
 - c) Omeprazole hian antiepileptic drug (Phenyton) hnathawh a tichak sawt thei.
 - d) Omeprazole leh clarithromycin te hi pek kawp hian an hnathawh tur aia thain an thawk ve ve thei a, an inpui tawn a ni.
 - e) Voriconazole (antifungal) hian Omeprazole hnathawh a pui thei.
 - f) Omeprazole hian Diazepam hnathawh a tithain a tirei sawt thei.
 - g) Omeprazole hian tacrolimus (immunosuppressant) leh cylosporin

(Immuno suppressant) te hnathawh a tichak sawt thei.

- h) Omeprazole hian anticancer drug (methotrexate) taksa atanga paih chhuah a titem a, chuvangin risk of toxicity a tam sawt a, pek kawp loh a tha.
- i) Lansoprazole absorption hi sucralfate hian nasa takin a tihnam thei.
- j) Antacid te hian Lansoprazole absorption a titem thei.

3. SUCRALFATE

- a) Sucralfate hian antibacterials (ciprofloxacin, levofloxacin, mixifloxacin, norfloxacin, ofloxacin & tetracyclines) te absorbtion a titem.
- b) Sucralfate hian anticoagulant (Coumarine) te hnathawh a titem.
- c) Sucralfate hian antiepileptic drug (phenytoin) hnathawh a titem thei.
- d) Sucralfate hian antifungal (ketoconazole) te hnathawh a titem (reduce the absorption).
- e) Sucralfate hian Antipsychotics (Sulpiride), Cardiac glycosides, Levothyroxine (thyroxine) leh ulcer healing drug (lansoprazole) te hnathawh a titem (reduce the absorption).

4. RANITIDINE

- a) Ranitidine hian antifungals (itraconazole leh ketonazole) te hnathawh a titem thei.
- b) Ranitidine hian tetracycline hnathawh a titem sawt thei.
- c) Ranitidine hian antibacterial (Cefpodoxime) hnathawh a titem sawt thei.
- d) Antacid hian Ranitidine hna thawh dan tur dik tak a tihnam thei.

5. CISAPRIDE

- a) Cisapride hi diazepam nena pek kawpin nasa leh zualin hna a thawk thei.
- b) Benzodiazepines leh alcohol te hian cisapride nena pek kawpin nasa leh zualin hna an thawk thei.
- c) Anti coagulant (eg: coumarin) te hnathawh nasa takin cisapride hian a pui a ni.
- d) Cisapride hian Ranitidine leh Cimetidine te absorption nasa takin a pui a ni.
- e) Anti convulsants te nena pek kawpin cisapride hian effect a neih theih avangin anticonvulsant (eg: Phenytoin) te hi uluk taka monitor tur a ni.
- f) Cisapride leh 1) antiallergics, 2) antibacterials, 3) antidepressants, 4) antifungals, 5) antinauseants, 6) Antipsychotics leh 7) protease inhibitors te hi pek kawp loh tur.
- g) Cisapride hnathawh hi anti-cholinergic drug (eg: Atropine, Hyoscine,

Dicyclomine) hnathawh a tibo vek thei.

6. DOMPERIDONE

- a) Domperidone hnathawh hi Opioid analgesics (eg: Morphine, Pethidine, etc) te hian an tibo vek thei a ni.
- b) Domperidone hian Paracetamol hnathawh (absorption) a tichak sawt thei.
- c) Antimuscarinics (eg: Atropine, Dicyclomine, Hyoscine, etc) te hian Domperidone hnathawh an tibo vek thei a ni.
- d) Domperidone leh Amantadine te hi pek kawpin extrapyramidal Reactions, Parkinsonism, Akathesia (awm hlehle theih lohna), acute dystonic, Tardive dyskinesia te hi a thleng thei a ni.

ANTIEMETIC DRUGS

1. MECLOZINE

- a) Meclozine hian alcohol, barbiturates, hypnotics, opioid analgesics, sedative and neuroleptics te hnathawh, a bik takin CNS depressant an nihna kawngah nasa takin a pui thei a ni.
- b) Atropine, tricyclic anti depressants leh MAO inhibitors te hnathawh nasa takin a pui thei.
- c) Ototoxicity aminoglycosides-in a thlen theih thin hi Meclozine hian a dang thei a ni.
Side effect: CNS depression, khawhmuh fiah lohna, dang rona, zun harsatna, êk khal, thisen hniam, luhai, lu na, luakchhuak, beng kiu vung vung (tinnitus).

2. CINNARIZINE

- a) Alcohol nena eikawpin Cinnarizine hian CNS depressant effect a tisang sawt thei.
- b) Domperidone hnathawh (effect) a tichak sawt thei.

3. BETAHISTINE (anti-emetics and antinauseants)

- a) Anti-histamines hnathawh reng reng hi Betahistine hian a tibo vek thei.

HYPNOTIC AND ANXIOLYTICS

(Benzodiazepines) (Diazepam, Nitrazepam, Alprazolam, Oxazepam, Lorazepam, Chlordiazepoxide, Flurazepam, Clonazepam)

- a) ACE inhibitors (eg: Captopril, Ramipril, Lisinopril, etc) te hnathawh (hypotensive effect) hi Benzodiazepines te hian an tichak sawt thei a ni.
- b) Alcohol (Zu) nena pek kawpin Benzodiazepines te hian mut tihchhuahna leh zawina (sedation) a tisang thei a ni.
- c) General anaesthetics te hnathawh hi Benzodiazepines te hian nasa takin a tisangin a tichak sawt thei.
- d) Opioid analgesics (eg: Morphine, Pethidine) te hnathawh hi Benzodiazepines te hian nasa takin a tisang thei.
- e) Angiotensin Receptor antagonists (eg: Saralasin) te hypotensive effect hi Benzodiazepines te hian nasa takin an puibawm thei a ni.
- f) Rifampicin te hian Benzodiazepines te plasma concentration a tihniamin metabolism a tisang thei a, hei vang hian pek kawp loh tur.
- g) Isoniazid hian Diazepam metabolism a titawp a ni.
- h) Benzodiazepines te hian antiepileptics (eg: Phenytoin, Carbamazepine, Primidone) te hnathawh a tisangin emaw a tihniam thei.
- i) Benzodiazepines te hi antihistamines te nena pek kawp hian Sedative effect a sang sawt thei a ni.
- j) Antipsychotics te hi Benzodiazepines te nena pek kawpin Sedative effect a sang sawt thei.
- k) Diazepam hian a bik takin Zotepine (antipsychotic) hnathawh nasa takin a pui thei.
- l) Amprenavir (antivirals) te hi Benzodiazepines nena pek kawp hian mutchhuak tam lutuk leh Respiratory depression a sang thei em em a, chuvangin pek kawp loh tur a ni.
- m) Ritonavir (antiviral) te hian Benzodiazepines te plasma concentration a tisang thei a, hei hian mutchhuak tam lutuk leh respiratory depression te a tisang thei.
- n) Alprazolam hi indinavir (antiviral) nen pek kawp loh tur, a chhan chu mutchhuak tam lutuk leh respiratory depression a sang thei
- o) Vasodilator antihypertensive (hydralazine, minoxidile, nitroprusside) te hi Benzodiazepines nena pek kawp hian hypotensive effect a sang sawt.
- p) Cimetidine hian Benzodiazepines te metabolism a inhibit avangin plasma concentration a tisang sawt a, an hnathawh Cimetidine hian a tisang sawt thei.

- q) Omeprazole leh esomeprazole hian diazepam hnathawh nasa takin an pui thei a ni.
- r) Benzodiazepines te hian Muscle Relaxants (Baclofen or Tizanidine) te hnathawh (Sedative effect) nasa takin a pui a ni.

AMITRIPTYLINE (anti-depressant)

- a) Alcohol hian Amitriptyline nena pek kawpin Sedative effect a tisang sawt thei.
- b) NSAID, Tramadol te hi Amitriptyline nena pek kawpin plasma concentration a sang sawt a, CNS toxicity risk a sang sawt bawk.
- c) Amitriptyline hian anticoagulant (Coumarin) hnathawh nasa takin a pui thei a ni.
- d) Amitriptyline leh General Anaesthetics te pek kawp hian risk of arrhythmics (lungphu tha lo) leh hypotension (thisen hniam) a thlen thei a ni.
- e) Amitriptyline hi amiodarone, disopyramide, quinidine, procainamide, flecainide, propafenone te nen hian pek kawp loh tur a ni, a chhan chu risk of arrhythmia a thlen theih avangin.
- f) Moxifloxacin hi Amitriptyline nena pek kawpin Ventricular arrhythmia a thlen theih avangin pek kawp loh tur a ni. Rifampicin hian Amitriptyline hnathawh a titem sawt thei bawk.
- g) Amitriptyline hnathawh hi St. John's wort hian a tihniam thei.
- h) Amitriptyline hian antiepileptics (eg: Primidone, Phenytoin) hnathawh a tibo vek thei. Tin, carbamazepine leh Phenytoin hian Amitriptyline Blood plasma concentration a tihniam thei.
- i) Artemether/Lumefantrine (antimalarials) te hi Amitriptyline nen pek kawp loh tur.
- j) Amitriptyline hian baclofen (muscle relaxant) hnathawh a tichak sawt thei.
- k) Disulfuram hian amitriptyline hnathawh a tichak sawt thei.
- l) Clonidine (antihypertensive) te hnathawh hi Amitriptyline hian a tihbo vek theih bakah Clonidine ei tawh loh hnuah thisen sang thawk-leh-khatah a thlen thut thei.
- m) Amitriptyline hian Anxiolytics & Hypnotics (eg: Diazepam, alprazolam, Lorazepam, etc) te hnathawh (Sedative effect) nasa takin an pui thei.
- n) Cimetidine hian Amitriptyline hnathawh nasa takin a pui thei.

ANTIHYPERTENSIVE DRUGS

Amlodipine/Nifedipine/Felodipine/Nicardipine (Calcium Channel Blockers(CCB))

- a) CCB te hi ACE inhibitors (eg: Captopril, Ramipril & Lisinopril) te nena pek kawpin hypotensive effect a sang sawt thei.
- b) Alcohol (zu) nena eikawpin hypotensive effect a sang sawt bawk.
- c) General anaesthetics hian CCB nena pek kawpin hypotensive effect a sang sawt thei.
- d) CCB hypotensive effect hi NSAIDs ho hian an tibo thei a ni.
- e) Nifedipine hian quinidine plasma concentration (taksaa a hnathawh) a tisang sawt.
- f) Rifampicin hian CCB te hnathawh nasa takin a pui thei.
- g) Nifedipine hi insulin nen pek kawp hian glucose tolerance a tidik lo zo vek.
- h) Phenytoin hian Nifedipine hnathawh nasa takin a tihniam thei a ni.
- i) Mefloquine (antimarials) nena CCB pek kawp hian bradycardia a thlen thei.
- j) Cimetidine hian CCB hnathawh nasa takin a tichak.
- k) CCB hi clonidine nena pek kawpin hypertensive effect a tisang sawt thei.
- l) Diuretics nena pek kawpin hypotensive effect a tisang sawt thei.
- m) Theophylline hi Nifedipine nena pek kawpin a hnathawh a chak sawt thei.

Atenolol/Bisoprolol/Propranolol (Beta-blockers)

- a) Beta-blockers te hi ACE inhibitors te nena pek kawp hian hypotensive effect a tichak sawt thei.
- b) Alcohol (zu) nena pek kawpin Beta-blockers hian hypotensive effect a tisang sawt thei.
- c) General anaesthetics te nena pek kawpin Beta-blockers te hnathawh a sang sawt thei.
- d) Insulin nena pek kawpin Beta-blockers hian zunthlum control-na lamah nasa takin a pui thei.
- e) NSAID ho hian an hnathawh a tichhia (block) thei.
- f) Baclofen, Tizanidine te nena hman kawpin antihypertensive effect a tisang thei.
- g) Cimetidine te nena pek kawpin plasma concentration a tisang.
- h) Carbenozolone hian a hnathawh a tibo vek thei.

- i) Zial zuk hian an hnathawh a titem sawt thei.
- j) Anxiolytics leh hypnotics hian an hnathawh a tichak thei.
- k) Diuretics nena hman kawpin a hnathawh a tisang thei.

ACE INHIBITORS

- 1) ACE inhibitors te hi alcohol nena pek kawpin hypotensive effect a tichak sawt thei.
- 2) Allopurinol leh captopril te hi pek kawp chuan risk of toxicity a sang emem a, a bik takin zunkawng lam that lohna a thlen thei.
- 3) ACE inhibitors leh Alpha-blockers (eg: Prazosin, Indoramin, Doxazosin, Terazosin) te pek kawp hian hypotensive effect a sang sawt thei.
- 4) ACE inhibitors te hi NSAID nena pek kawp hian zunkawng lam that lohna a thlen nasa thei em em a. Tin, hypotensive effect a bo vek thei. Hyperkalaemia a thlen thei bawk. Chuvangin pek kawploh a tha.
- 5) Antacid te hian ACE inhibitors te absorption a timuang.
- 6) Rifampicin hian ACE inhibitors te plasma concentration a tihniam thei.
- 7) ACE inhibitors te hian anticoagulants (eg: Heparin) nena pek kawp hian Hypercalaemia a thlen thei.
- 8) ACE inhibitors tena hypotensive effect an neih hi MAO inhibitors te hian nasa takin an tanpui.
- 9) Antidiabetics (insulin, metformin, sulphonylurea) te hnathawh hi ACE inhibitors ten an pui thei.
- 10) Corticosteroids te hian ACE inhibitors te hnathawh a tibo (antagonise) vek thei.
- 11) ACE inhibitors te hypotensive effect hi muscle relaxant (eg: Baclofen, Tizanidine) te hian an tichak sawt thei.
- 12) ACE inhibitors te hypotensive effect hi ulcer healing drugs (Carbenoxolone) ten an tibo (antagonise).
- 13) ACE inhibitors te hypotensive effect hi vasodilator antihypertensive (eg: hydralazine, nitroprusside) ten an tichak thin.

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NAUAWIMU LEH KEI

Dr. T.C. Lalhriatpuii

Asst. Professor, Deptt of Pharmacy, RIPANS

Kan pi pu tena Nauawimu tia a hming an sak hi ka han bel Chiang a, Mizo mipuite hriata tlem han tar lan ve hi tha in ka hria a, mahse thu leh hla thiamlo tak ka nih avang erawh chuan ka insit hle a ni. Ka Ph.D degree hmuh nan nauawimu hi ka hming hial a ni. Kan pi leh pu ten nauawimu hi khawsik, zunthlum, awmvel, thawhah leh awmna enkawlnante an lo hming thin a, ek nemnan pawh an hming bawk. Hnute dawi chhuahnan pawh a tha hle niin an sawi thin. Nauawimu hi hruizam diah diah chi a ni a, a rah chu fanghma ang deuh mahse te reuhte engsen vit vet a ni. Hmanlai chuan nu nau pawm ten an fa pawmlaite an feh san dawr dawr thin a, an nau a theiloh deuh chuan nauawmtu ten nauawimu hi a hnah nen parthi angah siamin naute tahbelh deuh te chu an awrh tir mai thin a, mak deuh maiin naupang tap chu an bangin an mu siai siai thin an ti zu nia! Chutiang avang a nauawimu tia hming chawi hlen ta hi a lo ni. Cucurbitaceae family a ni.

Ka zirchianna atanga ka thil tawnhriat tlem han tar lang ila. Alcohol (methanol) hmingin nauawimu hnah a thil hrang hrang (drug molecules) inpawlh awmte chu kan la chhuak hmasa phawt a, chu chu crude extract tiin kan vuah a, he crude extract hi nachhawkna, khawsik damdawi leh na, thoh, vung etc damdawi (analgesics, antipyretics & anti-inflammatory agents) atan a that leh that loh sazupui, sazu

leh chaichimah te khawl hrang hrang (Ugo Basile 7140 Plethysmometer, Italy; tail-flick meter Ugo Basile 7140, Italy; Analgesiometer, Eddy's Hot Plate, Model K19514); digital Telethermometer (Rolex, 7140) hmingin kan enchhin a, paracetamol, indomethacin leh diclofenac sodium te nen kan khai khin a, he nauawimu hian analgesic,

antipyretics & anti-inflammatory activity a nei ngei a ni tih Chiang takin finfiah a ni.

Crude extract chu kawng hrang hrang leh khawl hrang hrang (Thin Layer Chromatography, Column Chromatography, UV (Jasco-Spectrophotometer Model V-530), Mass Spectropho-

tometer (Qtof Micro Y A263 ;Switzerland), IR Prestige-21, FTIR Spectrophotometer leh Bruker-DPX-300 ;Switzerland; 300 mHz Spectrophotometer) te hmangin zir chian leh a ni a. He nauawimu hnah atang hian damdawi tha deuh mai pahnih flavonoid glycosides (Luteolin 7-O-glucoside leh Apigenin 7-O-glucoside) te lak chhuah a ni a, heng flavonoids te hi nauawimu atang chuan lakchhuah (isolated and characterized) vawikhatna a ni. Khawvel hmun hrang hrangah heng flavonoid glycosides te hi nachhawknan te, thisen sang damdawi atan te, zunthlum enkawlnan te, khawsik leh vung thoh enkawl nan te damdawia siam niin a man pawh a to hle a ni. A bik takin Luteolin 7-O-glucoside phei hi sedative & hypnotics (damlo tih mutna)

atan a that hle thu Scientist ten an lo tar lang ve mek bawk. He ka zir chianna atanga ka hmuhchhuah pawimawh ka tih ve em em chu nauawimu tih hming chawikan pi leh pu tena an lo phuah hi a lo dik hle mai, nau a lo awi mu thei ngei a lo ni, he nauawimu hi chaw hmeh atan te pawh anlo hmang bawk thin. Zir chian leh zual a chakawm hle mai, eng ang takin nge nau a awih mut theih tih hi zir chian tum in hma kan la leh mek a, phenobarbitone, diazepam ten en khaikhin a zir chian tum mek a ni. Kan ram hnim te hi a lo va hlu in khuanu hian ro hlu tak taka lo phum ru reng mai a ni tih hi hai rual a ni lo! Kan ram leilung hausakna te haichhuaka khawvel hriata tlang zarh zel tur hian kei ni Zofa te hi Lalpan min thlang tak meuh a ni. Theih tawpin i bei zel ang u!

WINE ... ZAWLAIDI

Dr H. Lalhlenmawia
HOD, Department of Pharmacy, RIPANS
hlenmawia@gmail.com

Wine chu thil tui in chi, zu (ethanol) pai tel, grape atanga siam a ni. Grape rah hminte chu lakhawmin dawidimte nen dah pawlh a ni a, a hranpa-a zu siam thei chi thil dang, chini emaw, enzyme emaw te telh lovin grape-a chaw tha lo awm sate kha zu-ah a insiam ta thin a, chu chu wine a lo ni ta a ni. Grape káwrah hian dawidim ang chi, amahin a neih ve hrim hrim *natural yeast* chi khat a awm ve a, hei hian grape rah sawr, a kawrte nena dah pawlh hian, grape-a sugar leh carbohydrate te atangin zu an siam ve thin a, hei vang hian hmun tam takah chuan dawidim a hranpa-a telh kher loh pawhin zu a lo insiam thin. Grape kher lo pawh thei dang, apple leh berries angte atang pawhin dawidim telhin wine a siam ve theih tho a, mahse heng te hi chu a thei hming chawi tel khera sawi an ni thin. Entirnan, Apple wine, Elderberry wine, etc. Wine tia lam bik hi chu Grape atanga siam an ni bik a ni. Grape tam tak chuan zu tam tak siamna turin carbohydrate te leh sugar te an nei tam tawk lo va, wine zu pai tel tha tawk an nei lo fo thin. Hetiangah hi chuan spirit telh belh a ni thin a, chutiang hmanga uain siam chu Fortified wine an ti deuh bik thin.

Wine hi zu a ni em?

Wine hian zu a keng tel a, a awm zat erawh chu a chi hrang a zirin a inang lo thei. A nihna takah chuan wine hi zu a ni a, a thenah te phei chuan a zu pai hi a sang viau thin bawk. Tuna Mizorama wine kan neih Zawlaidi hi fortified wine niin 14% zu tel angin a bura intar (Label-ah) kan hmu a, a sang hle mai.

Wine-te hi table food ti a sawiin hmun thenkhatah chuan zu chi dang whiskey, rum, vodka, etc. te anga zu-a chhiar an ni chiah lo thin; hei hi a chhan ni bera lang

chu wine-ah hi chuan grape rahin mihring tana chaw tha a pai chi hrang hrang, enzyme te, carbohydrate te, glucose te, protein te leh acid te kha wine-ah an awm tel thin vang niin a lang. Wine hi zu a ni kan tih rualin kan tarlan tak ang taksa tana chaw tha pawh tam tak a pai tel ve bawk a ni. Hengte avang hian food item-te zingah chhiar tel an ni ve thin bawk.

A va thúr ve?

Grape wine-te hi an thúr tlangpui thin, acid a tel tam thin avangin. Acid tel tam dan hi pH zawngin teh a ni tlangpui a,

tuisik thianghlim tak mai hi pH 7 vel an ni a, pH a tlem khan acid a tam tial tial tihna a ni thin. Wine-te hian a tlangpuiin pH 3 atang a pH 4 thleng te an nei a, a chungga kan tarlan tawh fortified wine ni lo te phei chu an pH a hniam tlangpui vek a, thúr tura ngaih an ni tlangpui a ni. He an thúrna hi Acid chi hrang hrang awm vang a ni a, dan naranin Ascorbic acid (Vitamin-C), Formic acid, Citric acid, Malic acid, Succinic acid, Tartaric acid leh Acetic cid te an awm tlangpui. Heng acid-te hi grape rahin an neih sa te an ni hlawm a, a thente hi chu grape rah atanga zu an insiam (fermentation) avanga lo awm thar te an ni thin bawk. Heng acid-te hian wine ven him kawngah nasa takin an pui a, pH a san chuan wine hi a tha rei thei lo a, natna hrik ten a tichhe thuai thin. Heng bakah hian wine hi a thúr hian a tui zawk hle nia hriat a ni bawk. Chutih rualin heng acid-te hian taksa-ah harsatna an thlen nasa thei hle bawk. Pumpui ulcer te leh kawthalo te an thlen ve bawk thin a, control a tul hle a ni. Acid bikah hian Tartaric acid a tel tam phei chuan kawthalo a thlen nasa hle a ni.

Wine-te hi ruihna tura zu dang anga in a ni lo tlangpui a, a chhan chu zu dang nena khaikhin chuan acid a san em avang te leh thil dang carbohydrates leh protein ang te an awm thin vang a ni a; ruih hnêpna khawpa duh tan chuan zu mai ni lo thil dangte avangin taksaah harsatna a siam thin a, pumpui ulcer te a thlen hma em em a ni. Ruihna khawpa lo in thin tan chuan sim a tul hle a ni.

Wine tha lo a awm thei em?

Wine quality te hi a inang lo thei em em a, grape rah azir leh a siam uluk danah a quality a inngat thuk hle a ni. A tlangpuiin ram luma grape rah hian acid an nei tlem a, an thlum tha bik thin a, hmun

vawta grep rah te hi an thúr bik a, acid an pai tam zawk thin. Hei vang hian wine hmun hrang hrang atanga siamte hi an tui dan a inang lo thei hle a, thenkhat an thúr viau laiin thenkhat te chu an thlum thin bawk. Hei vang hian hmun tam takah chuan wine tihtui nan chini te an pawlh belh teuh thin. Chini chu glucose-ah a chang leh a, hre miah lovin taksain a mawmawh aia tam daih glucose a lo ei phah thei thin a, zunthlum veite leh BP sang bikte tan phei chuan a hlauhawm thei hle thin a ni. Wine-te hi kan tarlan tawh angin Grape rah atanga siam a ni a, grape rahte hi rannungin an duh em em thin; hei vang hian hmun tam takah rannung thahna hlote an hman hial a ngai thin. A hun lova hman a nih chuan grape rahah khan túr hlauhawm tak tak, insecticide residue kan tih leh pesticide residue te a awm thei a, taksaah cancer te an thlen theih avangin a hlauhawm hle a ni. Heng bakah hian grape rahah te hian heavy metals kan tih mercury, lead, iron, silver, etc. te an awm ve thin a, heng heavy metals te hi taksa cancer thlen theitu an ni a, an lo tel ve ang tih a hlauhawm hle a ni. Grep atanga wine siam lai hian zu chi khat methanol lo insiam tel chang a awm ve thei bawk. Methanol hi a hlauhawm em em a, taksa chhungah hian formaldehyde-ah insiam lehin taksa tana túr hlauhawm takah a chang thin. Wine-te hian kan tarlan tak ang khan glucose te, carbohydrate te an pai vek a, hei vang hian natna hrik tam tak tan chuan nunna leh inthlah punna hmun tha takah a



chang thei a, a siamna hmunah uluk a nih loh pheih chuan natna hrik tam tak ei palh a awl hle a ni. Hmun tam takah chuan wine vawn thatna atan Potassium metabisulphite te telh an ni bawh thin. Hei hian Sulphur dioxide a siam a, a nihna tur ang tawh chauh a tel chuan wine a titui viau thei a, a tam lutuk chuan mihring tan a pawh viau thei bawh a ni. Grape rahah te hian túr chi khat Mycotoxin te an awm duh hle mai a, ei tel palh chuan luak, kawthalo leh khawsik te a siam thei bawh a ni. Heng lo pawh hi thil dang pawimawh tak tak a la awm nual a ni.

Quality Control

Ram changkang zawh, Europe te, USA te leh Australia-ah te chuan a chungkan tarlan tawh thil chi hrang hrang te, mihring tana hlauhawm tur ang chi te chu hlauhawm lo tawh tura wine-a tel thei tur zat bithliah fel tak an nei thlap mai a, chutiang quality nei pha lote chu mipui ei tura hralh chhuah an khap tawp mai a ni. Wine hi zu chi dang, Whiskey, Rum, Vodka, etc. ang a ni ve lo va, grape rah atanga insiam, thlitfim, a tuina tur leh a that reina tur atana thil chi hrang hrang pawlh leh an nih avangin heng glucose, heavy metals, methanol, sulphur dioxide, acid, etc. ang te hi mihring tana hlauhawm tham an nei tel hma bik em em a, hei vang hian quality control tha taka neih a ngai a ni. Quality tha lo wine in palh a nih chuan mihring tana thil hlauhawm chi hrang hrang nasa takin kan ei a lo ni reng thei a ni.

A thatna lam ve thung

Grape rah káwrah hian enzyme chi khat Resveratrol an tih a awm a, he chemical hi rannunga zir chianna neih tawhah chuan BP sang tan te, diabetes tan leh cancer (a bikin vun leh chuap cancer) atan te a tha em em a ni tih hmuhchhuah a ni tawh a

ni. Resveratrol te hi grape káwrah an awm a, grape rah atanga zu tlem a lo insiam a, thil dang nen an lo inchawhpawlh hnu chuan grape káwr atanga wine-ah kalin hun rei tak chhung chhe lovin an awm thei ta thin a ni. He Resveratrol avang hian ram thenkhat wine in nasa, France ang te hian a nawlpuiin Diabetes leh BP sang an vei tlem bik ni te a rin a ni hial a ni. Hei lo pawh grape wine-ah hian, a bikin a rawng senah hian anthocyanin a awm tha hle a, hei hian taksa thil bawlhhlawh awm, free radical-te a pailh chhuak thei tih finfiah a ni bawh a; hei hian diabetes nasa takin a veng a, a bikin taksa a timám thain vun bawl leh chuar lakah nasa takin taksa a veng thei a ni. Wine hian carbohydrate te, protein te a ken tel nual avangin a dose tawh leka in a nih chuan taksa tan a thain chaw tha tam tak a supply a, a tichak thei hle a ni.

Zawlaidi lam ve hung

Thlirna a tam thei hle awm e. Thingtlang lam ten an thlai tharchhuah atanga siam a nih avangin an thawhrim hlawkna an tel thei ngei dawn niin a lang a, an lawmpui-awm hle mai. Mahse Mizoram chu ZU khapna state a ni miau mai a, wine hming chu eng ang pawh lo ni se, zu a neih zat 14% a ni miau mai si a, do loh theih loh, khap si lohah a chang ta a ni. Engpawh ni se, vawinah chuan kan bazarah te lei theihin a lo awm ta miau mai si a, kan in lo thei ta lo a ni. Heti laia ka'n sawi duh chu- wine a nih avangin mihring tan a thianghlim tawh tihna a ni lo. Quality tha lo tak leh hriselna tichhe thei wine a awm thei a ni tih kan hriat a tha hle mai. Hei vang hian sawrkar phalnain an siam a ni ta rau rau bawh a, sawrkar hian hma la se, quality tha tak mipuite ei turah hian siam chhuak se a va tha em. Mizoram mai hi target lo in, foreign ram te a hralh tlak

tur quality hi awm thei se, zawlaidi chu Paris-ah te, London-a mi chengte pawhin in ve se, kan va hlawk leh zual dawn em!

Heti lo zawn pawh hian thlir ila... engvangin nge ZU hi 14% kher kher an neihtir? A tam lutuk a, mi a tirui dawn Chiang a ni. Hei aia tlem daih, ruihna tham loh zu

pai chung hian wine tui tak, fak tlak a siam theih Chiang a ni.

Zawlaidi chungchanga ka thupui berfo mai chu mihring tana hlauhawm loh quality tha, khawvel hmun hrang hrangah pawh zawrh tlak tur siamin i in ve tawh ang u tih hi a ni.

Dosage Forms (Drugs to Medicines)

*Lalduhsanga Pachuau
Asst. Professor, Deptt of Pharmacy, RIPANS*

Paracetamol 500 mg tablet hi damdawi dawr atangin han lei la, bukna tha takah I buk leh chuan 500 mg aain a lo rit zawk tih I hre thei ang. Damdawi reng reng a hlanga ei turin siam a ni ngai lova, a damdawia ber tluk zeta pawimawh pawlh tur chi hrang hrang a keng tel thin. Heng thil pawlhelh te hi a ei nawmna tur te, a siam awlsam zawkna tur te, a thawh that zawkna tur te, a vawn thatna tur te leh chhan dang dang vang a ni. Damdawi thenkhat chu a dose a tlem em em a, a hlanga ei ngaihna awm lo deuh thaw te a ni thei. Entirnan, chhangkhatna damdawiho dose hi 1 mg aia tlem te a ni thin a, chung te chu mahnia inbuk chawp a han ei dawn chuan a ngaihna a awm lo a ni. Chuvangin ei theih tur leh awlsam zawkna turin a damdawi tichhe si lovin a pawlh tur te chu telh a ni thin. Chung te chuan damdawi (Drugs) a chu ei theih turin a Medicine-ah arawn chantir ta a ni.

Dosage Forms:

Ran talh dan kawng khat chauh a awm lo ang bawkin Damdawi siam dan pawh hi kawng hrang hrang a awm a. Heng kawng chi hrang hrang hmanga damdawi siam te hi Dosage forms an tih chu a ni a. Chung te chu - A mum chi (Tablets), Laihren (Capsules), A tui chi (Solutions, Emulsions leh Suspensions) te, Hnawih chi (Ointments, Pastes, Creams leh Gels) te, Hip chi (Aerosols, asthma damdawi a ni tlangpui) leh Chiu

chi (Parenterals/Injectables) te hi an ni. Heng kan hriat lar bak pawh hi tlem azawng chu a awm bawk. Heng damdawi chi hrang te hi i han bel chiang dawn teh ang:

Tablets: Damdawi mum kan tihho hi pianhmang chi hrang hrang a awm thei a. A siamtu company-in an thilsiam tihdanglam nan rawng te pawh an neihtir thei a, an rawng hman erawh chu phalna nei a ni tur a ni. A dose a zirin a lianin a te thei bawk.

Capsules: Leihren kawr (Capsule shell) hi Gelatin (Source - Pig Skin etc) atanga siam a ni. Vegetarian-ho in a ei hreh thin avangin a source dang pawh zawn zel a ni. Capsule Shell hi thur (Acid)-ah a zawpral mai thei lova, al (Alkaline)-ah a zawpral tha thung a ni. He Capsule kawr hian damdawi chu kan pumpui thurin a tichhiatna turah a veng a, ril (Intestine)-ah a zawpral thung (Ril hi Alkaline a ni). Kan damdawi leh chaw kan ei te hi ril atanga thisena hip luh a ni tlangpui tih pawh hi hria ila.

A tui chi (Solutions, Emulsions leh Suspensions): Damdawi tui chi ah hian Solution, Emulsions leh Suspensions te a awm a. An thawh chak dan leh an thawh rei chhung a inang lo thei. Solution chu damdawi a zawpral (Soluble) theih chuan awlsam taka siam theih a ni a, mahse damdawi kha awlsam taka zawpral tir theih a nih loh chuan Emulsions-ah emaw Suspensions ah emaw siam a ngai thin a ni. Emulsion hi tui leh hriak (Water and Oil), uluk taka inchawhpawlh a ni a. Dah vang vang chuan tui leh oil-ah chuan a inthen hrang leh thin a, han thin hian a inpawlh tha leh em em a ni. Bawngnhnute pawh hi emulsion a ni. Suspension hi chu damdawi engahmah zawpral thei lo te tana siam a ni. Hei pawh hi ei hmaa thin vak ngai chi tho kha a ni.

Chiu chi (Parenterals/Injectables): Greek tawng 'Par' (pumpel, by-pass) leh 'Enteron' (ril, intestine) lakkawp atanga Parenterals tih hi lo chhuak a ni

a. Taksaa chiu luhho hi a huam vek a, kan ril atanga taksaa hip luh (Absorbed) a nih loh vangin. Thisen zama chiu luh chi te, tihrawla chiu luh chi te a awm a. Inchiu chi ho hi a siam kawngah pawh uluk leh fimkhur a ngai em em a, Quality Control uluk leh fimkhur tak hmanga a siam dan pawh khuahkhirh tlat a ni.

Hnawih chi (Ointment, Pastes, Creams leh Gels): Kan vuna hnawih atana siam an ni. Heng hnawih chi chi hrang hrang ho hian danglamna eng emaw chu an nei theuh mai. Antibiotics leh Corticosteroids (Betnesols etc.)-ho an ni tlangpui.

Hip chi leh a puh chi (Inhalations/Aerosols): Asthma damdawi leh nachhawkna siamnan hman a ni. Inkhell laia intina te pawh an rawn puh sur sur thin hi, magic spray te pawh an tih thin kha.

An thawh ran dan:

Mihring taksa pangngaia heng dosage forms hrang hrang te thawh ran dan leh an hun mamawh te han en thuak thuak ila.

Chiu chi: Injections ho hi an thawk chak ber a, inchiu rau rau ah pawh thisenzam (IV) a chiu hi a thawk chak ber a, chiu lu rualin a thawk nghal a ni ber. Tihrawl (IM) a chiu hi chu thisenzama la hip luh (absotbed) ngai a la ni. Mahse a ei chi ai chuan a la thawk chak fe.

Solutions: Damdawi reng reng thisen zama hipluh a nih dawn chuan an zawpral tur a ni a, tablet pawh ni se a

zawpral phawt tur a ni. Solution hi zawpralsa a nih avangin injection tih lohvah chuan a dang aiin a thawk chak zawk a ni.

Emulsions: Emulsion te hi solution zawhah chuan an thawkchak leh a, solution nen an inang thuak a ni.

Suspension: Damdawi kha kan pumchhungah la zawpral tur a ni a, hei hian hun a duh deuh avangin a hna thawhna turin hun a duh rei deuh. Minute 15 aia rei pawh a ni thei e.

Capsules: Tablet ai chuan a thawk rang zawk a, suspension nen a inang hle. Mahse a powder a nih avangin suspension ai chuan a thawk muang deuh.

Tablets: Tablet hi a thawk muang ber tur ngaih a ni. A mum kha a kehsawm phawt a ngai a, chumi zawhah ala zawpral chauh dawn a ni a. Thisena hipluh leh a la ngaih avangin minute 30 vel, chu aia rei pawh a thawh tur ang thawk tur chuan hun a duh thei.