ASTUDYOFANTI-INFLAMMATORY ANDANTI-VIRALACTIVITYOF POLYHERBALFORMULATION "LIVPRO®"INHEPATITISCPATIENTS

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Abstract:

To investigate the safety and efficacy (anti-inflammatory and anti-viral) of poly herbal formulation LivPro® tablets in the management of patients with chronic hepatitis C infection. A total of 112 patients were enrolled in study. Patient dosage for LivPro® was 2t.i.d (2 tablets 3 times a day) for six months. Clinical assessment of signs and symptoms were registered using the Clinical Evaluation Performa at enrollment and subsequently after every 30 days. Biochemical investigations of Alanine Aminotransferase (ALT) also known as Serum Glutamic Pyruvic Transaminase (SGPT), Aspartate Aminotransferase (AST) also known as Serum Glutamic Oxaloacetic Transaminase (SGOT), Gamma Glutamyl Transpeptidase (Gamma GT or GGT), Total Bilirubin and Alkaline Phosphatase (ALP) as of liver function tests were evaluated every month along with their Hepatitis C Serum Antigen (HCsAg) using Enzyme Linked Immunosorbent Assay (ELISA) method. A 5% or more change in biochemical clinical marker is termed as significant change while below 5% is termed as insignificant. For classification patient were divided into 5 groups based on their center of enrollment. Within group 5 Polymerase Chain Reaction (PCR) Quantitative is done in selected 7 patients at the enrollment and every two months thereafter till sixth month. For other groups random PCR Quantitative is done during treatment and a compulsory one at the end of the treatment on completing 6th month of therapy. After six months of therapy with LivPro® significant reduction of ALT, AST, GGT,

total bilirubin and ALP is observed. Significant number of patient became undetected for viral load in their PCR RNA Quantitative test. Adverse effects were mild and never warranted withdrawal of drug. The result of this pilot study indicates that LivPro® might be safe and effective treatment for Chronic Hepatitis C patients in terms of its anti-inflammatory and anti-viral properties. A long term multicenter comparator trial is warranted and under way especially to evaluate sustained virologic response (SVR).

Keywords: Hepatitis C, Chronic HCV, Liver Function Tests, Viral Load, ALT, AST, bilirubin, Gamma GT, genotype, HBV, Unani, Herbal, Liver health.

Introduction

Hepatitis C: Hepatitis infection is one of the major public health problems in Pakistan. In Pakistan more people die of liver disease due to chronic hepatitis every day than terrorism in a year [3]. Among Hepatitis, Hepatitis C Virus (HCV) is one of the commonest causes of chronic liver disease, cirrhosis, hepatocellular carcinoma and indication for liver transplant[2]. In Pakistan 10 million people are presumed to be infected with HCV. According to WHO Pakistan carry 2nd position in prevalence of Hepatitis C only after Egypt [6]. This translates into Pakistan carrying one of the World's highest burdens of end stage liver disease and mortality due to liver failure and hepatocellular carcinomas (HCC).

The manifestation of hepatitis C is variable with an asymptomatic chronic HCV infection at one end and an advanced cirrhosis and hepatocellular carcinoma at the other end of the scenario. It is evident that patients with chronic HCV infection not only have the risk of developing serious consequences such as chronic hepatitis and cirrhosis, but also have a potential of transmitting the virus to others. Effective control and management of any infection requires thorough understanding of its epidemiology, natural history of infection and the available pharmacological agents.

In the last decade there has been a tremendous increase in awareness and knowledge on different aspects of hepatitis, particularly the treatment of Hepatitis C, the development of new drugs, drug resistance, combination therapy, non-responder and re-lapsers treatment, gene therapy etc evolving from conventional

interferon, consensus interferon, pegylated interferon, protease inhibitors and oral nucleotide analog inhibitor.
However the current treatment rate and efficacy are not sufficient to manage the disease burden of HCV. Thus Alternative strategies are required to keep the number of HCV individuals with advanced liver disease and liver-related deaths from increasing [1].
A harmless and affordable yet effective therapy for normalizing liver enzymes and reducing the viral load would therefore be of considerable interest.
The use of natural substances has become more widespread over the past few years, driven undoubtedly by the belief that natural substances may have fewer side effects than allopathic pharmaceuticals and take lead by their ready availability to the public without prescriptions or visits to the health providers.
Unani system of medicine is recognized by NIH and WHO since 1976 as a complementary and Alternative medicine (CAM). Unani has been practiced in sub-continent for many centuries and is recognized as a complete medical system comparable with allopathic medicine by the Government of Pakistan. In Pakistan, Unani has its own infrastructure including separate council, medical institutes, universities, hospitals and scientific journals devoted to Unani.
Unani explains specific reasons for Hepatitis and elaborates various herbs and minerals that might contribute to reversal of the disease. Modern science has set liver function test (LFT) parameters and decrease in viral load as primary clinical markers for success of any treatment for hepatitis C.

Study Objective:

The purpose of this study is to build correlation between Unani treatment methodology and its results on modern clinical markers, for which LivPro® is used as a reference product.
In this study LivPro® is clinically evaluated as alternate to conventional drugs in terms of its efficacy as an anti-inflammatory and anti-viral therapy in chronic Hepatitis C Patients.

Unani:

A Greco Arabic healing philosophy that incorporates major elements of ancient Greek medicine (Unani means "Greek" in Arabic) which assumes four elements—earth, fire, water, air and four corresponding humours: Phlegm (balgham), Blood (dam), Yellow bile (safra) and Black bile (sauda) in account. In Unani keeping a balance between humours through diet and use of natural herbs/minerals ensure ideal health. According to Unani, hepatitis is a disease of the circulatory system and is categorized under biliary (safra) disease. Restoring balance of humours in right proportion can not only energize regenerative capability of the liver but its capacity to fight against germs including viruses.
As Unani is based on holistic approach, it is a challenge to understand systematically the true benefit of Unani medicine in a Western medicine schema e.g proving the efficacy of the medicine on available biochemical clinical markers.

Method:
This was a 24 weeks study conducted simultaneously in five different clinics which includes Al-Khidmat Foundation Center Hafizabad and four "Hamdard Matab" geographically located within the limits of Lahore. The study was supervised by qualified registered Tabibs & Pharmacists. Research Performa is designed by the product evaluation team and consulted by gastroenterologist and senior allopathic physicians while the study was sponsored by Awami Laboratories Lahore Pakistan. Chronic Hepatitis C Patients (n=112) were enrolled and divided into 5 groups as per their enrollment center.
AlKhidmat Foundation Hafizabad (n= 51)
Hamdard Matab Lytton Road Lahore (n= 19)
Hamdard Matab Allama Iqbal Town Lahore (n= 11)
Hamdard Matab Wahdat Road Lahore (n= 10)
Hamdard Matab Garhi Shahu Lahore (n= 21)
For classification each patient Product Evaluation Performa is marked with a unique identity topping their respective center code.
Each groups received LivPro® tablets in 2t.i.d dose. At enrollment Elisa screening was done. An inclusion and exclusion criteria was evaluated. Informed and written consent was taken from each study participant. Patients were advised at the time of enrollment to follow the standard dietary do's and don'ts. Patients were

requested to keep routine physical activity and general life style as constant as possible. The patients were forbidden to take any other anti-inflammatory and anti-viral drug throughout the study period. They were also advised to come for follow up at fortnightly intervals for collecting there medicine, however blood test screening and feedback was taken at 0, 4, 8, 12, 16, 20 and 24th week. For all groups Elisa, LFT's were done at enrollment and then every 4 week. Random PCR is done on patients with different intervals for all groups (except 7 selected patients in group 5 whose PCR is done at enrollment and every two month) and a compulsory PCR Quantitative at 24 week completion of medication.

Inclusion Criteria:
Patients of either sex, age 18 years or older, willing to participate in the product evaluation, and signed informed consent.

Exclusion Criteria:
Exclusion criteria was evaluated based on patient with any other liver disease than chronic hepatitis C, pregnant or breast feeding, receiving any other study medicine, not willing to share blood sample every month, not willing to be part of the study program.

Statistical Analysis:
All the data expressed is taken as a mean or ± SD evaluated. All the graphs, calculation and statistical analyses were performed using Microsoft Excel version 14.0.4734.1000.

Results:
Modifications in the liver function test markers including ALT, AST, GGT, bilirubin and ALP were evaluated at week 0, 4, 8, 12, 16, 20 & 24th week. Viral load was checked at random and on completing 24th week of medication for all the groups while for selected patients in group 5, PCR at enrollment and then after every 8 weeks.

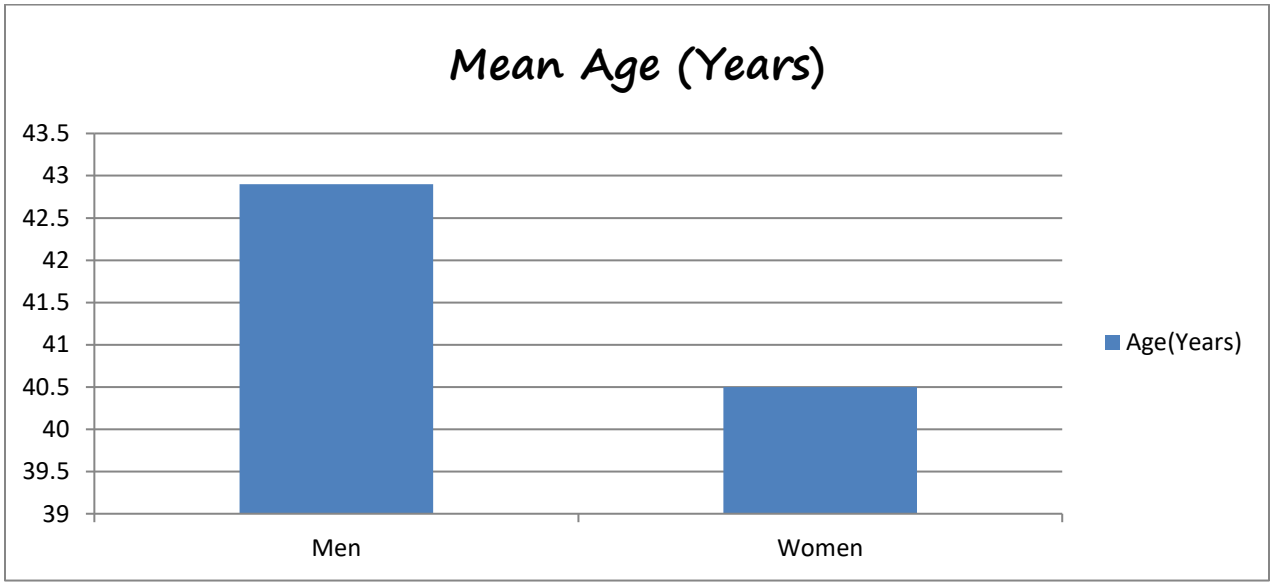
Among 112 patients initially enrolled in this study 7 patients were already

negative in their Elisa Antibody test. 26 patients dis-continued during 6 months of treatment span. 7 patients dis-continued from Al-Khidmat Foundation Hafizabad, 8 patients from Hamdard Center Lytton road Lahore, 4 patients from Hamdard center AIT Lahore, 2 from Hamdard Center Wahdat Road Lahore and 5 from Hamdard Center Garhi Shahu. Reason for dis-continuation of treatment includes refrain from attending calls for unknown reason, fear of bleeding for clinical examination every month, job posting change to another city and gynecological surgery. All these patients left in first two months only. Remaining 80 patients continued till the treatment period.

Table 1 shows the demographic distinctiveness of the study population. The patients were men 49 and women 63. Over all mean age for both male and female patients is 42(±9.6) years while mean age for male is 42.9(±10.1) and mean age for females is 40.5(±9.2) years

Table 1: Age related demographic data for enrolled patients

	Men: (n=49)	Women: (n=63)	Total: (n=112)
Age (years)	42.9±10.1	40.5±9.2	42.0±9.6

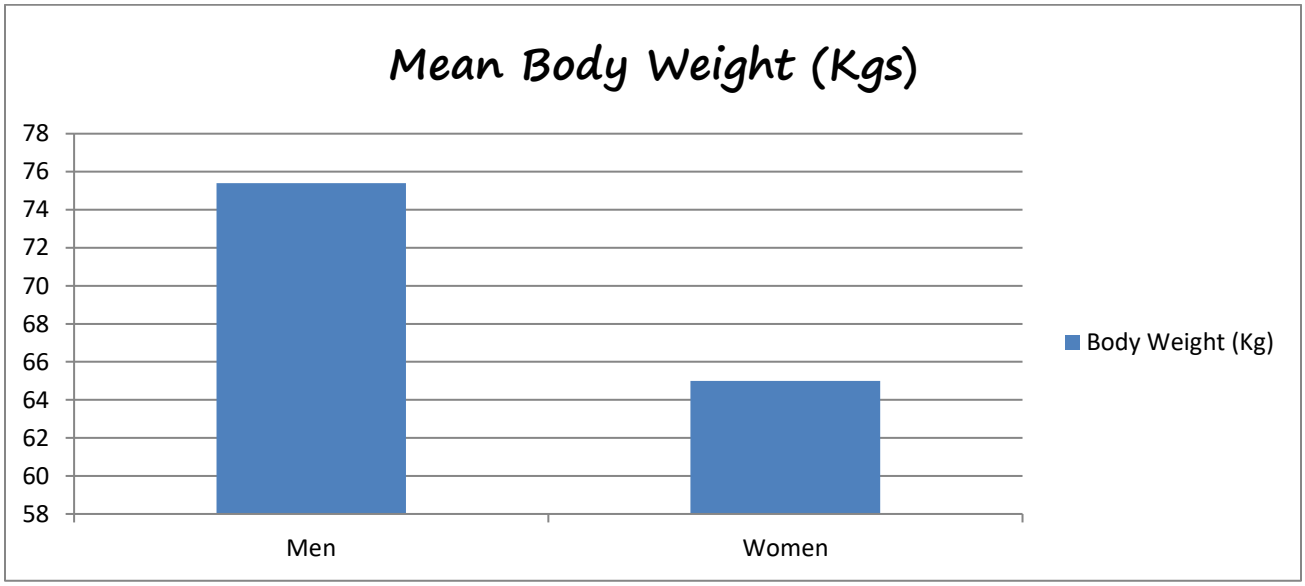


Age related statistics explains that enrolled patients are mostly in their 4th to 5th

decade of their life. There are 43.8% men and 56.2% women enrolled for the treatment.

Table 2: Weight related data of enrolled patients

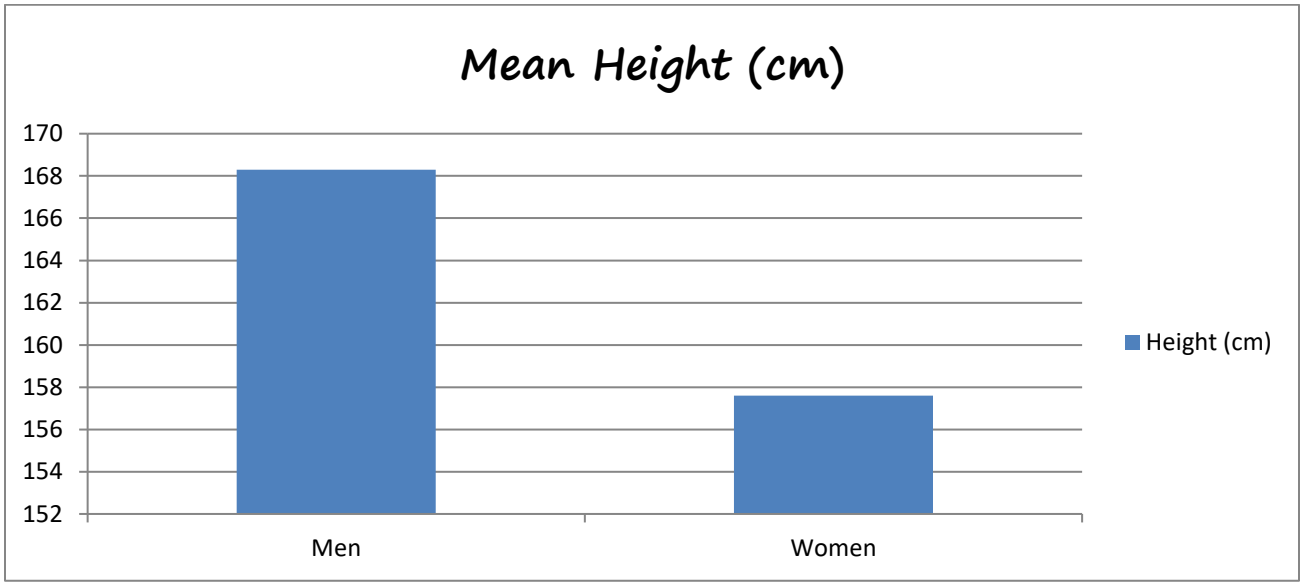
	Men: (n=49)	Women: (n=63)	Total: (n=112)
Body Weight (kg)	75.4±19.9	65±26.55	69.9±25.5



Mean weight of Men is 75.4±19.9 Kg while mean weight of women is 65±26.55 Kg.

Table 3: height related data of enrolled patients

	Men: (n=49)	Women: (n=63)	Total: (n=112)
Height (cm)	168.3±7.3	157.6±7.3	162.3±9



Average height of men is 168.3±7.3 cm while average height of women is 157.6±7.3cm.

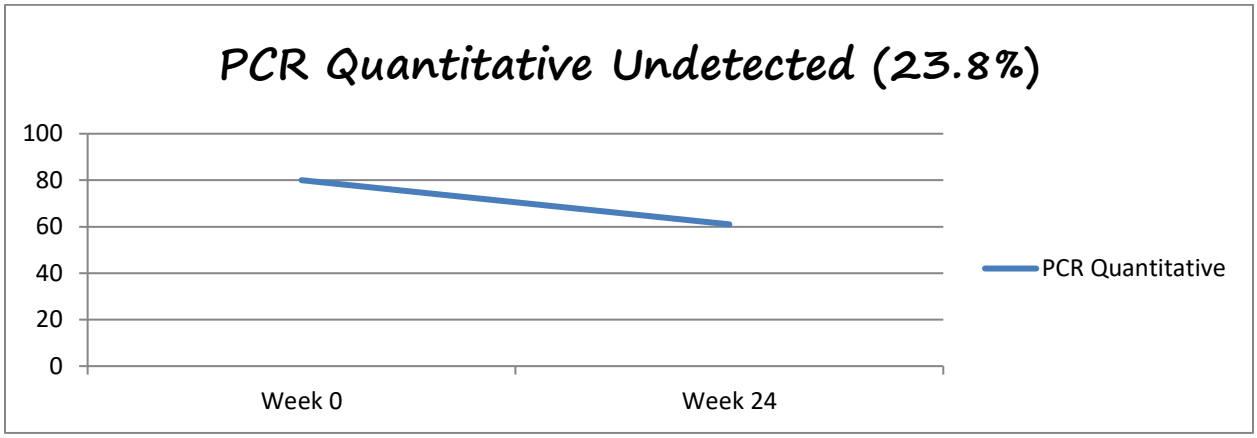
Table 4: Demographic data of patients categorized by their enrollment center

	Men: (n=49)	Women: (n=63)	Total: (n=112)
Group-1	19	32	51
Group-2	9	10	19
Group-3	6	5	11
Group-4	5	5	10
Group-5	10	11	21

Patient population is classified into 5 groups in respect of their enrollment centers. Patients enrolled at Al-Khidmat Foundation Hafizabad are classified as "Group-1", Patients enrolled at Hamdard Center Lytton Road Lahore are classified as "Group-2", Patients enrolled at Hamdard Center Allama Iqbal Town Lahore are enrolled as "Group-3", Patients enrolled at Hamdard Center Wahdat Road Lahore are enrolled as "Group-4" while patients enrolled at Hamdard Center Garhi Shahu Lahore are enrolled as "Group-5". Patient population enrolled in each treatment center with their gender classification is listed in above table.

Table 5: Data of Patients whose PCR Quantitative results become not-detected

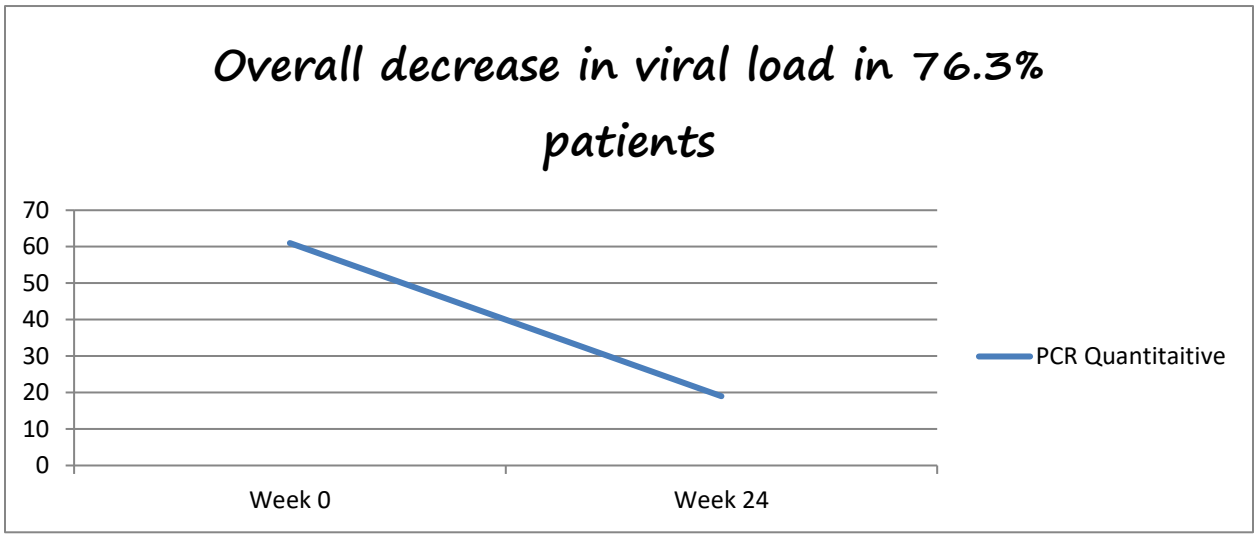
Clinical Marker	Week 0	Week 24
PCR Quantitative undetected	80	19



Significant number of patient became undetected in PCR RNA Quantitative for Hepatitis C. From total 80 patients who continued the treatment for 6 months, 19 patients become un-detected in HCV RNA Quantitative evaluation while remaining 61 patients reflect with at-least some viral load. This concludes 23.8% patients become undetected in their PCR RNA Quantitative.

Table 6: Patients with a continuous decrease in viral load among all groups

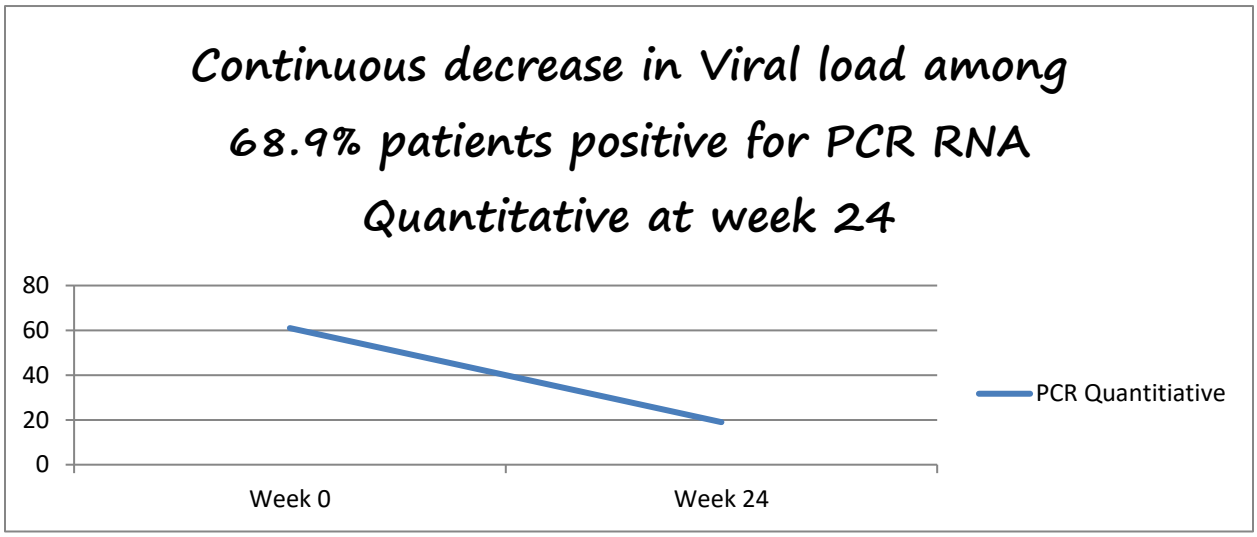
Clinical Marker	Week 0	Week 24
PCR Quantitative	80	61



Significant number of patient experience continuous decrease in their viral load values. From total 80 patients who continued the treatment for 6 months, 61 patients viral load is in linear decline for PCR RNA Quantitative values. This translates that in overall 76.3% patient treatment ensure anti-viral effect.

Table 7: Percentage of patients who experience continuous decrease in viral load among those who got some viral load at week 24

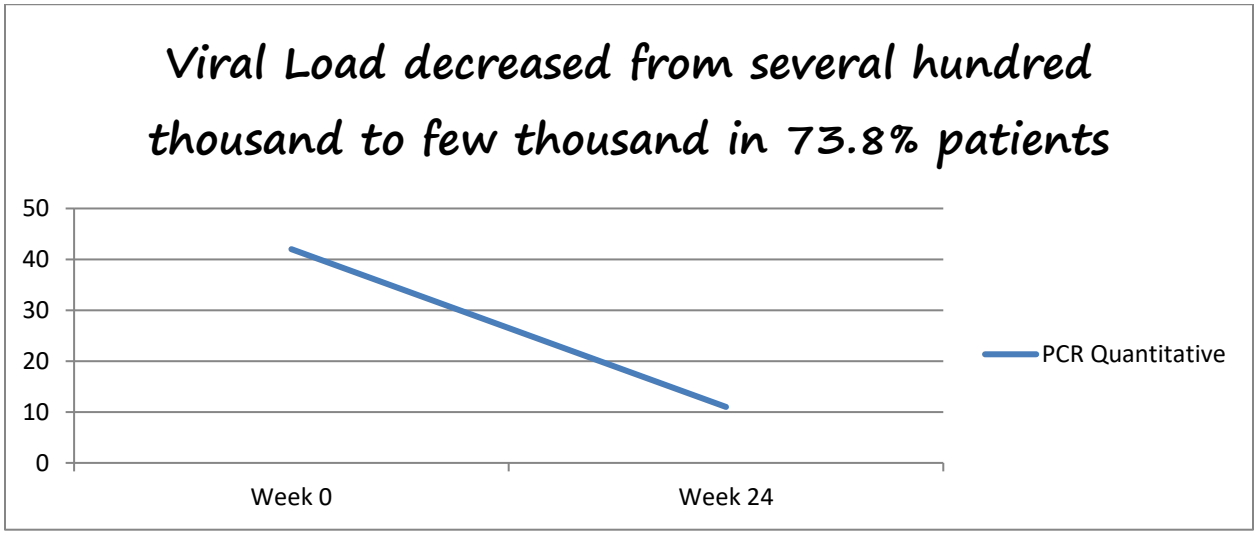
Clinical Marker	Week 0	Week 24
PCR Quantitative	61	42



From an overall patient community whose PCR got some viral load value at week 24, a significant number of patient experience continuous decline in their viral load from week 0 to week 24. From total 61 patients who got some viral load value 42 patients experience continuous decrease in their viral load values. This explains 68.9% patients got their viral load values in a linear decline and never increased during the treatment span. This reflects the anti-viral effect of LivPro® and we assume that these patients will ultimately be undetected for their viral load if the treatment continuous for a little longer.

Table 8: Decrease in viral load from several hundred thousand to few thousands.

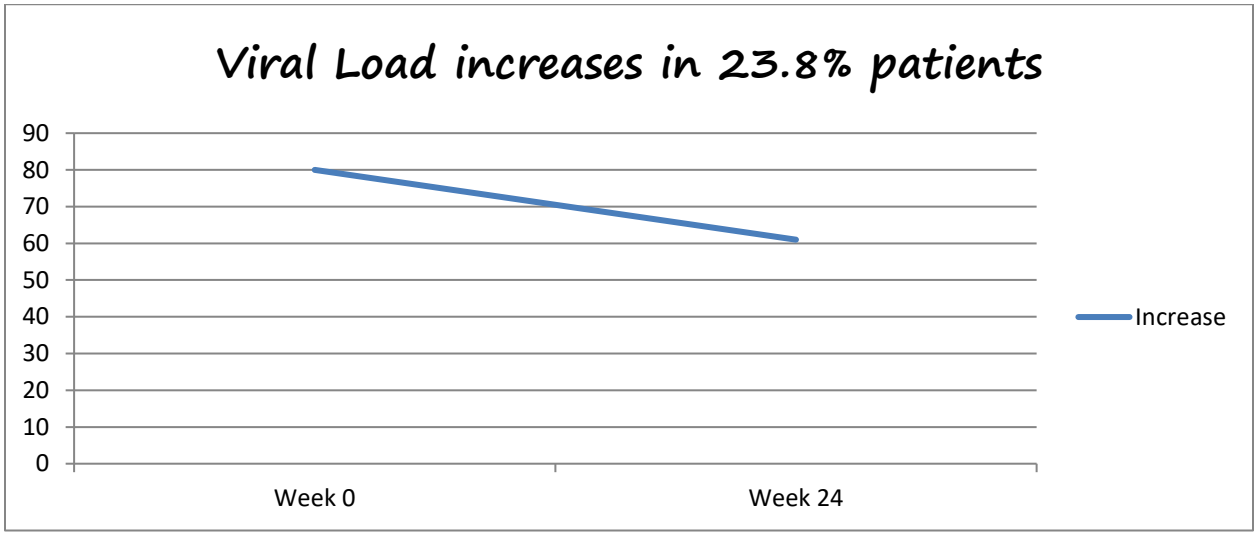
Clinical Marker	Week 0	Week 24
PCR Quantitative	42	31



Within 42 patients who are detected for some viral load but have a continuous decrease in viral load values, 31 patients i-e 73.8% are those whose viral load decreased from several hundred thousand to few thousand.

Table 9: Patients in which viral load remain positive and increased at-least at any one PCR Quantitative during 24th week treatment from their previous PCR Quantitative

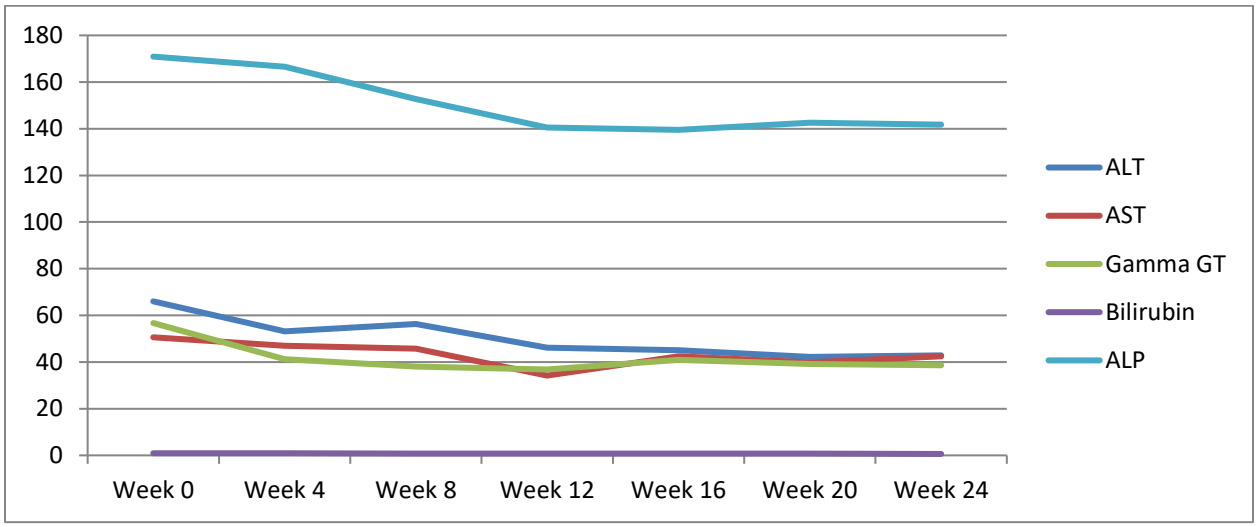
Clinical Marker	Week 0	Week 24
PCR Quantitative	80	19



Within 80 patients of chronic hepatitis C, there are 19 patients whose viral load increased from any of their previous PCR quantitative value. The point to note is that it's not always more than their first PCR quantitative value which in some cases is over 10 million copies/ml. On 24th week it's between 35000 copies/ml to 225000 copies/ml.

Table 10: : Mean changes in ALT, AST, GGT, Total bilirubin and ALP at week 0, week 4, week 8, week 12, week 16, week 20 and week 24 while treatment with LivPro® in patients enrolled from group 2 to group 5.

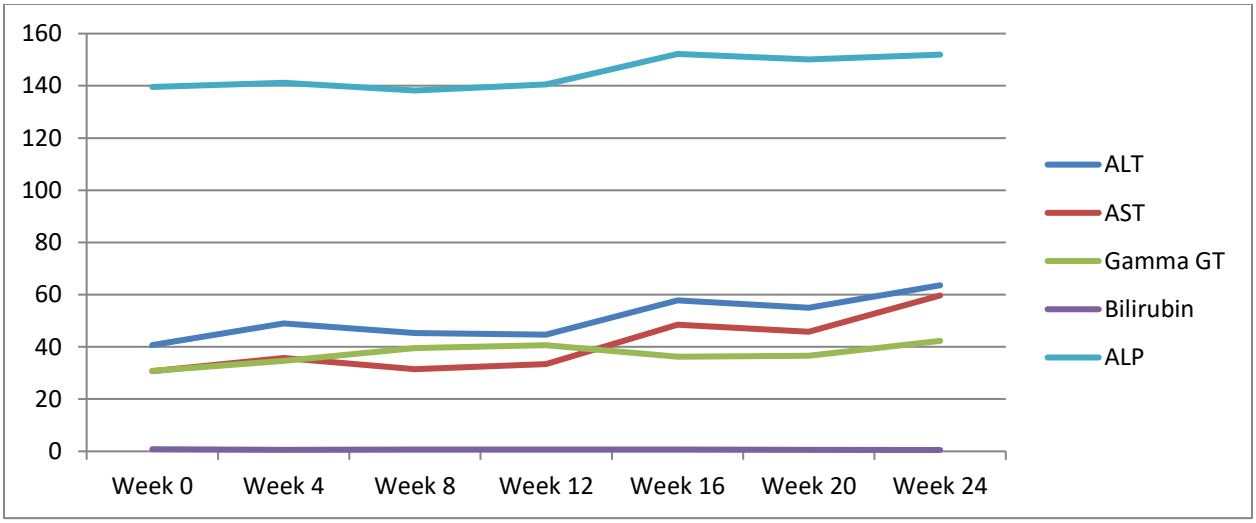
Clinical Markers	ALT (SGPT)	AST(SGOT)	Gamma GT	Bilirubin	ALP
Week 0	66	50.6	56.7	0.9	170.9
Week 4	53.1	47	41.2	0.9	166.6
Week 8	56.3	45.7	38.0	0.8	152.7
Week 12	46.1	34.2	36.8	0.7	140.5
Week 16	45.1	42.4	41.0	0.7	139.5
Week 20	42.2	39.8	39.1	0.7	142.6
Week 24	42.9	42.5	38.6	0.6	141.7
Changes%:	**35%**	**16%**	**31.9%**	**33.3%**	**17.1%**



The accumulated result of the study for all the patients enrolled at Hamdard Centers (group 2 to group 5) showed significant and almost gradual decrease in ALT (35%) from week 0 to week 24 while significant decrease (16%) in AST for the same period. Gamma GT shows significant decrease (31.9%) while significant decrease (33.3%) in total bilirubin is seen from week 0 to week 24. ALP is also significantly decreased (17.1%) for the same period.

Table 11: Mean changes in ALT, AST, GGT, Total bilirubin and ALP at week 0, week 4, week 8, week 12, week 16, week 20 and week 24 during treatment with LivPro® in patients enrolled in group 1 only.

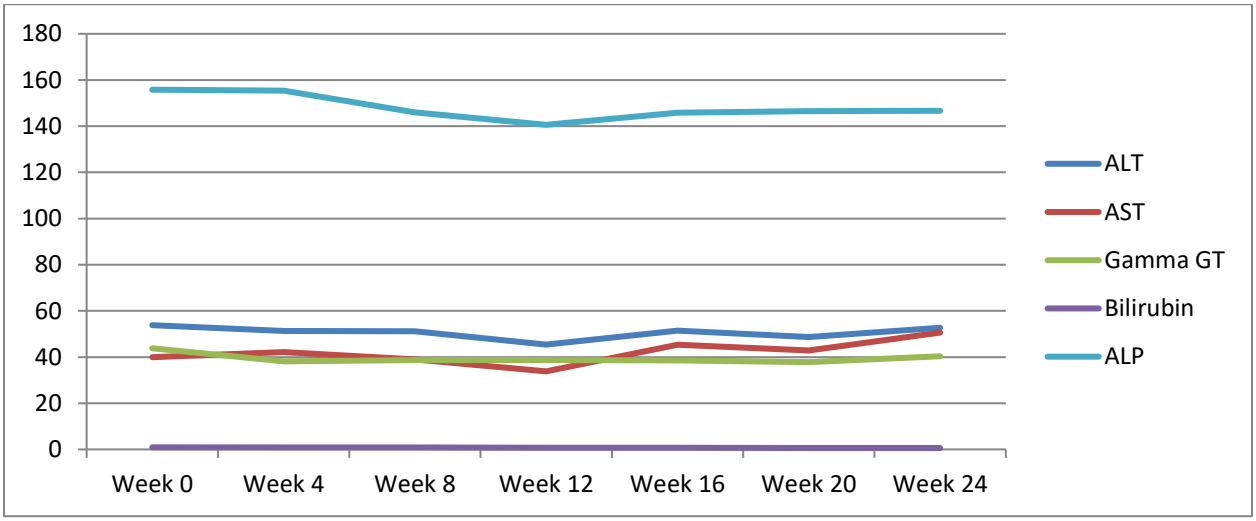
Clinical Markers	ALT (SGPT)	AST(SGOT)	Gamma GT	Bilirubin	ALP
Week 0	40.7	30.7	30.8	0.8	139.6
Week 4	49.0	35.8	34.6	0.6	141.2
Week 8	45.3	31.4	39.6	0.7	138.2
Week 12	44.7	33.4	40.6	0.7	140.6
Week 16	57.8	48.5	36.2	0.7	152.2
Week 20	55.0	45.8	36.6	0.6	150.1
Week 24	63.6	59.7	42.3	0.5	151.9
Changes%:	**56.3%(I)**	**94.5(I)**	**37.3%(I)**	**37.5%**	**8.8(I)**



The accumulated result of the study for all the patients enrolled at AlKhidmat foundation Hafizabad (group 1) showed significant increase in ALT (56.3%) from week 0 to week 24 while significant increase (94.5%) in AST for the same period. Gamma GT shows significant increase (37.3%) while significant decrease (37.5%) in total bilirubin is seen from week 0 to week 24. ALP is also significantly increased (8.8%) for the same period.

Table 13: Mean changes in ALT, AST, GGT, Total bilirubin and ALP at week 0, week 4, week 8, week 12, week 16, week 20 and week 24 during treatment with LivPro® in patients enrolled from group 1 to group 5.

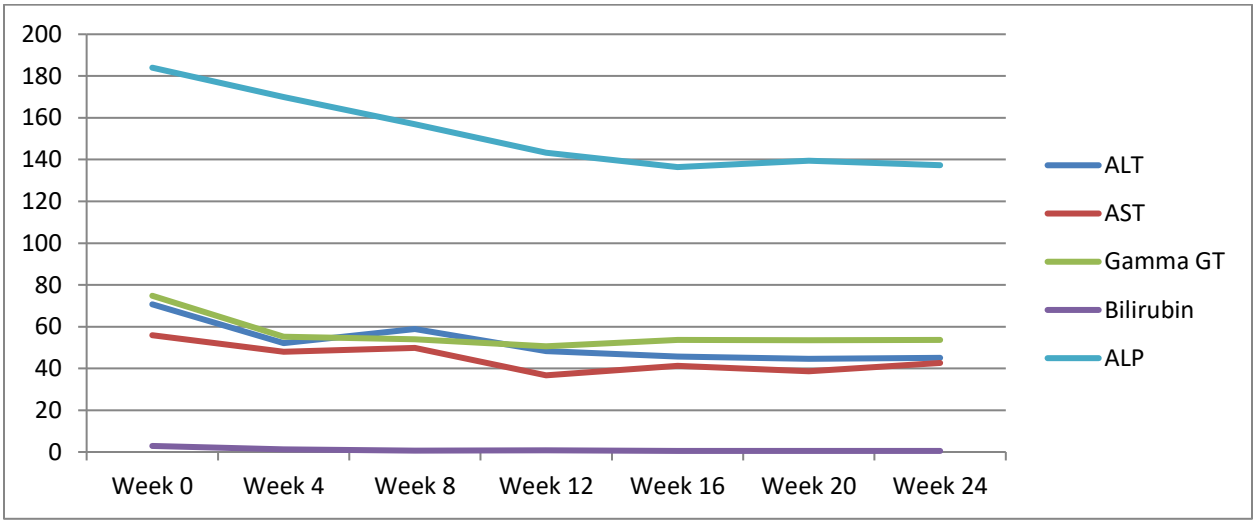
Clinical Markers	ALT (SGPT)	AST(SGOT)	Gamma GT	Bilirubin	ALP
Week 0	53.8	41.0	43.8	0.9	155.8
Week 4	51.3	42.1	38.2	0.8	155.4
Week 8	51.2	39.0	38.7	0.8	145.9
Week 12	45.4	33.8	38.7	0.7	140.6
Week 16	51.4	45.4	38.6	0.7	145.8
Week 20	48.7	42.8	37.8	0.6	146.5
Week 24	52.7	50.6	40.3	0.6	146.6
Changes%:	**2%**	**26.5%(I)**	**8.0%**	**33.3%**	**5.9%**



The accumulated result of the study for all the patients enrolled from group 1 to group 5 showed insignificant decrease in ALT (2%) from week 0 to week 24 while significant increase (26.5%) in AST for the same period. Gamma GT shows significant decrease (8.0%) while significant decrease (33.3%) in total bilirubin is seen from week 0 to week 24. ALP is also significantly decreased (5.9%) for the same period.

Table 14: Mean change in patients with abnormal LFT and Gamma GT values.

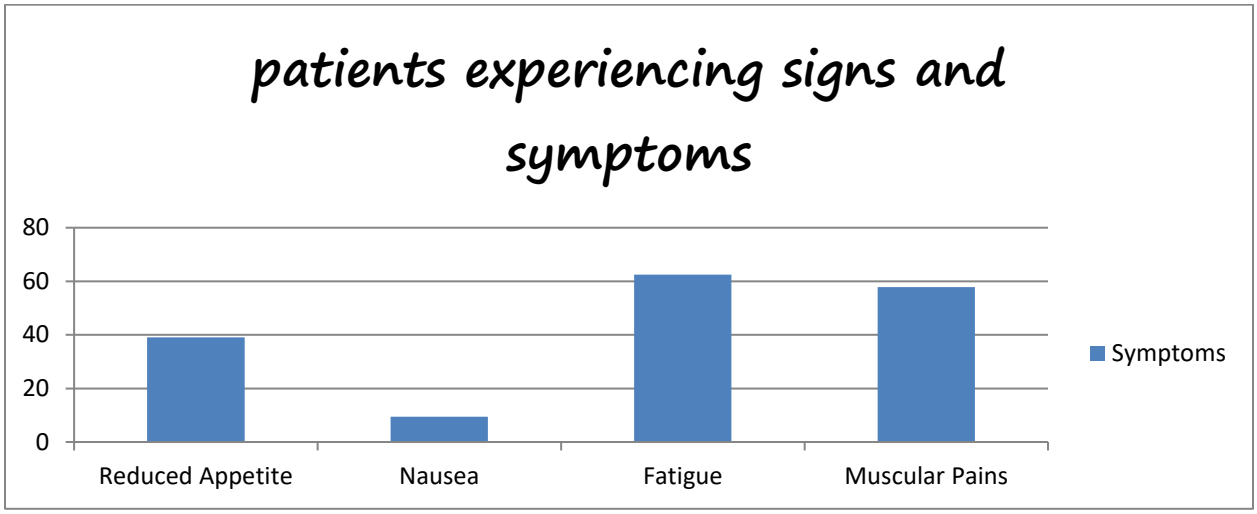
Clinical Markers	ALT (SGPT)	AST(SGOT)	Gamma GT	Bilirubin	ALP
Week 0	70.7	55.9	74.8	2.9	184.0
Week 4	52.2	48.0	55.2	1.2	170.0
Week 8	58.8	49.9	54.0	0.6	156.9
Week 12	48.3	36.7	50.6	0.8	143.3
Week 16	45.7	41.3	53.6	0.5	136.4
Week 20	44.6	38.6	53.5	0.5	139.2
Week 24	45.1	42.6	53.6	0.5	137.3
Changes%:	**36.2%**	**23.8%**	**28.3%**	**82.8%**	**25.4%**



The mean results for patients who have raised LFT and/or Gamma GT at enrollment among group 1 to group 5 showed significant decrease in ALT (36.2%) from week 0 to week 24 while significant decrease (23.8%) in AST for the same period. Gamma GT shows significant decrease (28.3%) while significant decrease (82.8%) in total bilirubin is seen from week 0 to week 24. ALP is also significantly decreased (25.4%) for the same period. One of important factor is that for those who have abnormal LFT's and Gamma GT at enrollment shows almost gradual decrease in all respective markers.

Table 15: Among Chronic HCV symptomatic patients experiencing one or more signs and symptoms as described below

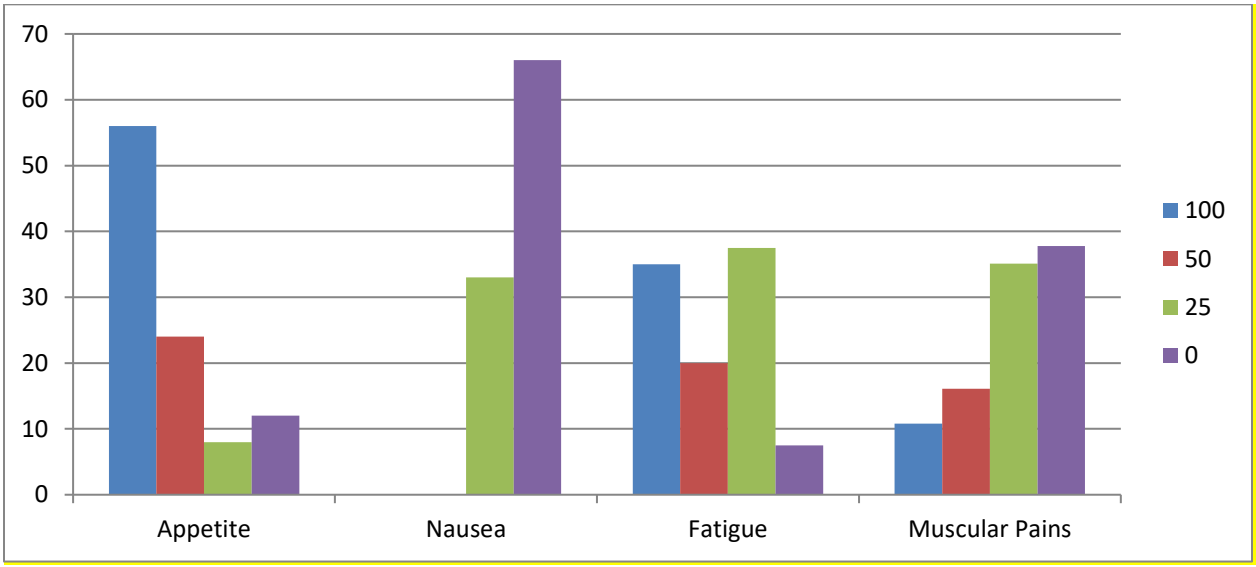
Symptoms	Reduced Appetite	Nausea	Fatigue	Muscular Pains
%age of patients	39.1%	9.4%	62.5%	57.8%



It's assumed that most of the patients of chronic hepatitis C remain asymptomatic for number of years. Study reveal that significant percentage of patients (39.1%) experience reduced appetite, Significant percentage of patients (9.4%) experience nausea, significant percentage of patients (62.5%) experience fatigue while significant percentage (57.8%) patients experience muscular pains.

Table 16: Ratio within symptomatic patients recovering from described signs and symptoms on week 12th

Patients Recovering from symptoms	Reduced Appetite n=25	Nausea n=6	Fatigue n=40	Muscular Pains n=37
100% recovery	56%	0%	35%	10.8%
50% recovery	24%	0%	20%	16.1%
25% recovery	8%	34%	37.5%	35.1%
0% recovery	12%	66%	7.5%	37.8%



In 25 patients who experience symptoms of reduce appetite, on week 12 there are 56% patients state 100% recovery, 24% patients state 50% recovery, 8% patients share 25% recovery and 12% share 0% recovery. For nausea on week 12, 0% patient state 100% recovery, 0% patient state 50% recovery, 34% patient state 25% recovery, and 66% patient state 0% recovery. For fatigue 35% patient state 100% recovery, 20% patient state 50% recovery, 37.5% patient state 25% recovery, 7.5% patient state 0% recovery. For muscular pains 10.8% patient state 100% recovery, 16.1% patient state 50% recovery, 35.1% patient state 25% recovery and 37.8% patient state 0% recovery.

A brief review	
Total Patients enrolled	112
Discontinued because already negative	6
Remaining Patients	106
Discontinued during 24 weeks of treatment	26
Patients continued throughout 24 weeks	80
PCR Not detected during treatment	19, 19/80 = 23.8%
Remaining Patients	61
Viral load consistently decreased	42+19 =61, 61/80 = 76.3%
A continuous decrease in viral load among detected patients	42/61 = 68.9%
Viral load decreased from several lacks to few thousand in detected patients.	31/42 = 73.8%
Viral load increased from their last PCR Q	19/80 = 23.8%
ALT decrease in patients with raised levels	Normal limit (with 36.2% decrease)
AST decrease in patients with raised levels	(with 23.8% decrease)
GGT decrease in patients with raised levels	(with 28.3% decrease)
Bilirubin decrease in patients of raised levels	Normal limit (with 82.8% decrease)
ALP decrease in patients with raised levels	Normal limit (with 25.4% decrease)

Sign's & Symptoms	**From Week 0 to Week 12**
Reduced Appetite	86% patients experience improved appetite
Nausea	9% patients experience nausea, 33% says improved
Fatigue	92.5% patients experience improvement
Muscular Pains	62% patients experience improvement

Discussion:

Present study monitored anti-inflammatory and anti-viral activity of poly herbal formulation LivPro in chronic hepatitis C patients. In hepatitis C, hepatitis means inflammation of liver, while "C" defines the virus type as root cause of inflammation to liver. Ideally for hepatitis C, cure can be termed to any affordable treatment which can bring the liver biological markers (LFT's & GGT) back to normal if elevated, viral load become undetected and patient is also relieved from the sign and symptoms. Each system of treatment got its own methodology in terms of handling disease and setting its cure milestone. In allopathic, origination of disease and prescribing medicine is based on germ theory or physical weakness of body. With this philosophy the fundamental goal for treating chronic hepatitis C infection is permanent eradication of virus. It's assumed that once the reason for hepatitis C i-e virus is eliminated, liver will not be further damaged. However such medicine e.g Interferon and ribavirin therapy is potentially dangerous in setting of decompensated cirrhosis because of the increased risk of life-threatening infections and the concern that treatment might accelerate hepatic de-compensation [4][5].

Unlike allopathic Unani is a holistic science. In Unani origination of disease and prescribing medicine is based on "Kafiyat or mizaj" and Ikhlat. Where there is an imbalance or malfunction in kafiyat/mizaj or Ikhlat in human body it produces disease or symptoms. Creating balance by changing diet or giving medicine ensures guaranteed treatment. In Unani the primary cause of disease is not considered a foreign element e.g virus and ensuing balance state of body or organ guarantee good health.

This study was primarily designed to establish scientific basis of Unani therapies. For this LivPro® is used as a reference product to prove reversal of Hepatitis C disease on clinical markers set by modern science.

Conclusion:

The present study has resulted significant decrease in components of liver function test including ALT, AST, GGT, Total Bilirubin and ALP bringing back within or close to its normal limits among patients in which these are raised showing its anti-inflammatory properties. With 23.8% patients resulting not detected for their viral load and a continuous decline in PCR Quantitative values in 76.3% patients ensure its anti-viral properties.

Results of this pilot study indicate that LivPro® might be safe and effective treatment for Chronic Hepatitis C patients in terms of its anti-inflammatory and anti-viral properties. A long term multicenter comparator trial is warranted and under way especially to evaluate sustained virologic response (SVR).

Additional Observations/Experiences/Suggestions:

- Hepatitis C prevalence in Pakistan in 2015 is much more than stated 4.9% population (10 million people) as per the study conducted by Pakistan Medical Research Council Islamabad in 2007-2008.
- Most of the people are in their 3rd to 5th decade of life and they came to know about their disease (HCV) almost after 10 years of becoming infected to HCV.
- In asymptomatic patients of HCV, among male it's discovered mostly while screening for a blood donation and among females during their pregnancy blood tests
- Standard medical treatment plans currently recommended are unattractive to many people in terms of its affordability, results and side effects
- for Interferon therapy there is a general perception that either it do not work or it reoccurs
- Its patient's right to know at which stage of liver disease he/she is. In many cases without explaining to patient supportive medicines are prescribed (for which he assume he will be cured with these medicine). Its more slaying in

cases where interferon is not recommended because of liver damage or affordability

- Failure to educate public about this disease has led to undue fears. For example, despite the fact that about 80% of those with hepatitis C virus are not expected to suffer from any clinically significant liver damage during their lifetime, virtually all those diagnosed with the disease are in fear of the most serious consequences and doctors are quick to recommend immediate treatment even when there is little evidence of disease progression.
- Even screened blood is causing HCV spread
- For same blood sample biochemical markers can give different results in different labs. Handling of sample and get screening from closest possible quality lab is important.
- A study should be planned with Hepatitis C patients who underwent interferon therapy and are classified "non-responders" to interferon. This means they have no other choices of treatment in the medical mainstream. In this study one female patient was infected with HCV Genotype 1 considered as toughest to treat and most prevalent in USA, she has completed pegylated interferon and ribavirin and was considered as non-responder. In 8 weeks her PCR become undetected treating with LivPro®.
- One patient we register for chronic hepatitis C is thalassemia patient too. She got infected with HCV apart from blood screening.
- A separate study should be planned for patients of hepatitis C who are intolerant to or have contraindication to interferon-based therapy
- The second phase of this study is taken up by a renowned university which surely is very encouraging. This will bring quite a bit of scientific credibility to this study
- Usually medical science consider fibrosis non-reversible. Although in this study we haven't gone for patient biopsy, however based on the ultra sound

reports, improvement in signs and symptoms we can estimate LivPro® as a regenerative medicine.

- We have two patients of chronic hepatitis B separately enrolled, one of them become negative in his PCR Quantitative for HBV while the other is under treatment.
- significant number of patients are entirely asymptomatic or nearly asymptomatic (among patients with some symptoms, the main symptom reported is fatigue)
- Patients are not routinely screened for the hepatitis C virus. Virus is only discovered accidently or in patients who are symptomatic for liver disease. From remote areas they are instructed to go to certain city hospitals for testing. Even then, testing may be limited to general hepatitis indicators (such as elevated liver enzymes), and not for determining the particular virus type or viral load. In Hafizabad city (which is district HQ) PCR Quantitative facility is initiated by a private physician.
- Alternate to allopathic therapies that reduce or remove symptoms and that reduce liver inflammation are considered effective especially in sub-urban population. If the disease symptoms appear again later, they are simply treated again. In many cases when HCV become chronic, patient liver markers become normal i-e close to normal or within range, this lead to a confusion and at times relate with reversal of the disease or success to a therapy. Testing for viral load is rarely done (it is very expensive and not readily available in most of the cities).
- relieving from symptoms and low liver-enzyme levels cannot guarantee absence of slowly progressing liver damage, at present in usual practice these indicators are the only means of evaluating success
- we understand that for hepatitis C, allopathic system position treatment effectiveness achieving SVR
- regular liver biopsies are virtually declined by all patients, despite physician recommendations

Affirmations:

- we are novice in medical research and we have started this with a belief that Almighty Allah will help us on our Niyyat
- each system of treatment got its own strengths
- in a broader canvas all established systems of treatment follow or endorse similar philosophy and principles
- we do not believe in integrative approach
- our fundamental objective is to serve humanity, saving lives
- we are not in a hurry to prove
- we know our limitations in terms of knowledge & resources
- we got little knowledge but we hope to gain lots of experience
- we believe in strength of the philosophy we follow
- there is no match of the feeling when Almighty Allah give health to a patient
- we are clear in our roadmap to progress for our fundamental objective
- The results of this LivPro® pilot study are only preliminary. We learnt lessons and full scale research project is in progress under the supervision of a university.

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