



“EFFECT OF CHULIKA VATI AND PANCHAGAVYA GHRITA MATRA BASTI IN HCC AS ADD ON WITH TRANSARTERIAL CHEMOEMBOLIZATION- A CASE STUDY”

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ABSTRACT-

Introduction- Hepatocellular Carcinoma is a primary liver cancer presents with symptoms like abdominal pain, nausea, vomiting, tiredness, yellow skin, abdominal swelling, easy bruising, appetite and weight loss which affects Quality Of Life of subjects. Transarterial Chemoembolization procedure has side effects like pain, nausea, fatigue and loss of appetite. Rasayana chikitsa by its apoptotic, antiproliferative, antiinflammatory, antioxidant, immunomodulation and antiangiogenic effects is effective in HCC subject in improving QualityOfLife, symptoms and managing side effects. Hence a diagnosed case is subjected to ayurveda intervention as an add on with Transarterial Chemoembolization after taking informed consent.

Materials and methods-The objective is to understand the effect of Panchagavya Ghrita and Chulika Vati as an add on with transarterial chemoembolization in managing symptoms and side effects. A male subject aged 54 years diagnosed case of HCC approached with complaints severe udara shoola, udaraabhirvridhi, agnimandya, trishna, jwara on and off and dourbalya since 6 months. The case is examined based on doshadhatumala vridhi kshaya lakshanas, agni, ama, gatavata and avarana concepts and line of treatment is planned based on above lakshanas. Rasayanas like Chulika Vati and Panchagavyaghrita were administered for 48 days and 15 days of follow up advised. **Results-** QualityOfLife was 36/72 before treatment and after treatment it was improved to 19 /72 [95% improvement]. **Discussion-**Hepatocellular Carcinoma in ayurveda

is a pittasthanagata tridoshaja saptadhatudushtijanya amaja aavaranaja agnidustijanya ojudustijanya vyadhi. Inorganic elements like calcium, sodium, iron, phosphate in Chulika Vati inhibits growth of liver cancer cells, drug delivery enhancement of cancer drugs to liver tumors. Steroids, terpinoids, flavonoids, alkaloids, phenols and tannins in Panchagavya Ghrita have antiproliferative, antioxidant, immunomodulatory, apoptotic and antiangiogenic effect. Rasayanas mentioned above corrects ama and agni present at each dhatu level by doing tridosha shamana and hence improving ojus. **Conclusion**-Present study is beneficial in improving general condition and well being of HCC subject as documented by the improvement in performance status scale. Details will be presented in full text.

Keywords- Hepatocellularcarcinoma, Panchagavyaghrita, Chulika Vati

FULL TEXT-

INTRODUCTION-

Hepatocellular Carcinoma is a primary tumor of the liver and constitutes more than 90% of the primary liver tumors¹. It presents with abdominal pain, vomiting, tiredness, weight loss, loss of appetite, nausea, jaundice, ascites and abdominal swelling which affects the Quality Of Life of subjects². Treatment modalities like Trans Arterial Chemoembolization and Radiofrequency Ablation shows side effects like pain, nausea, vomiting, fever, fatigue, diarrhoea, constipation, loss of appetite, hair loss and many more. Even, a common multi-kinase inhibitor prescribed in HCC, Sorafenib shows diarrhoea, fatigue, weight loss, nausea, vomiting, skin rashes, hand-foot skin reaction, hypertension, bleeding etc. Rasayana therapy showed positive result in HCC in reducing symptoms and limiting side effects through its antiinflammatory, analgesic, anti proliferative, antioxidant, anti tumor, apoptotic, immune modulatory and antiangiogenic actions. Hence a case study is presented where the subject took rasayana intervention as an add on treatment with Transarterial Chemoembolization.

OBJECTIVE-

The objective is to understand the effect of Panchagavya Ghrita and Chulika Vati as an add on with Transarterial Chemoembolization in managing symptoms and side effects.

STUDY DESIGN-

Prospective, open labelled, single arm, interventional and nonrandomised study.

CASE DETAILS-

A male subject aged 54 years not a K/C/O Diabetes Mellitus and Hypertension was normal 6 months back. Later on, he felt udarabhivridhi on intake of fat meal. Even he used to feel his agni is becoming weak as he was unable to digest even 2 chapatis which he was digesting comfortably 6 months before and suffered from

udara shula which was continuous and deep aching, on and off jwara, trishna and dourbalya. Because of this, he consulted gastroenterologist where he underwent all necessary investigations and was diagnosed as Hepatocellular Carcinoma. Then, he was referred to an oncologist, where he was advised to undergo Trans Arterial Chemoembolization and was prescribed with cytotoxic drugs. In spite of these therapies, subject didn't find improvement in the above mentioned symptoms and hence approached to our hospital for the betterment in Quality Of Life. To note with, in a span of 6 months, he lost nearly 4 kilograms of weight. **Past medical and surgical history-** Incidental diagnosis of HBV positive on 8/11/2023 and had appendicectomy- 15 years back. **Drug history-** had 2 sittings of Trans Arterial Chemoembolization on 14/12/2023 and 27/02/2024. Is on, Cap Pantocid, Tab Thyronorm, Tab Rivaflor, Tab. Oncovit, Tab Zinfocal XT, Tab Ceftum, Tab Chymoral forte and Tab Restyl. **Family history-** no significant history of similar carcinoma or HBV in his family members. **Personal history-** consumes alpa, ruksha, teekshna, guru, manda and sthira ahara. Does vishamashana and adhyashana. Follows mixed diet and his abhyavaharana and jarana shakti are avara. There is no history of tobacco chewing, smoking and alcohol. Subject is married, has madhyama koshta, disturbed and delayed onset of sleep. **Occupational history-** job stress is moderate and does exercise occasionally. Does proper vishrama and has shift duty. **Covid history-** had 3 doses of COVID vaccine.

Rogi pareeksha- Subject is well built with height, 170 cms and Weight, 96kg. BMI is 33 kg/m². Growth and hydration are intact. Mild pallor in palpebral conjunctiva noted. Vital data- Pulse- 78bpm, respiratory rate-17 bpm, blood pressure-130/82 mmHg, temperature- 37.5degree celcius, JVP- not raised and body hair is equally distributed. **Ashtasthana pareeksha-** nadi- gati is vishama and manda, mutra- rashi, varna, gandha and swaroopa are prakrita and frequency- 4-5 times/day and 1-2 times/night. Mala- prakrita with respect to rashi, varna and gandha, swaroopa is ruksha and frequency- once in 2 days. Jihwa- sama and lipta jihwa. Shabda- prakrita, Sparsha- sheeta sparsha and drik- mild pandu varna in palpebral conjunctiva and akriti is kaphaja akriti having goodha snigdha shlishta sandhi asthi and mamsa. **Dashavidha pareeksha other than vikriti-** prakriti is vata kaphaja. Samhanana, pramana, vyayama shakti and vaya are madhyama, satmya and satwa are pravara and ahara shakti is avara. Subject is a meda sara purusha [Sneha], asthi sara purusha [sthula asthi mahotsaha, kriyavanta, kleshasaha and sthira shareera] and satwa sara purusha [smriti manta, krutajna and bhaktimanta]. **Vikriti pareeksha-** In vata vriddhi- anaha, shakrit graha, balahani, nidrahani and atopa are seen. In vata kshaya- anga sada and agni vaishamyia are seen. In sama vata lakshanas- vibandha, agnisada, antrakoojana, kati parshwa Vedana and toda are seen. In kostaashrita vata- mala nigraha, gulma and parshwa shula lakshanas are seen. Sandhi Vedana with respect to sarvanga vata, mala avarodha, apana vayu shula and trikapradesha shula with respect to guda gata vata, Vedana in nabhi pradesha and parshwa and udara vedana in amashaya gata vata, udara shula, atopa and difficulty in passing mala in pakwashaya gata vata, dourbalya and aruchi in raktagata vata, atyarta toda and saruk- mamsa medo gata vata, santata vedana and bala kshaya- asthi majjagata vata, shotha- siragata vata, aruchi- medasaavrta vata, breaking type of pain- asthyavrta vata, shula- majjavrita vata, ativibandha- malavrta vata are seen. In pitta vriddhi, alpa nidrata and bala hani are seen. Agni mandya and toda are seen with respect to pitta kshaya. In kapha vriddhi, agnisada is seen. In kapha kshaya, dourbalya and toda are seen.

In **dhatu pareeksha**, in rasa dhatu vriddhi, aruchi and angamarda are seen. Swalpa chesta and shula lakshanas are seen with respect to rasa dhatu kshaya. Rakta dhatu vriddhi- pleeha, gulma, kamala and agninasha, mamsa kshaya- udara, rukshata and toda, mamsa vriddhi- arbuda, medo dhatu vriddhi- udara parshwa vriddhi, kasa, shwasa, shleshma rakta mamsa vikara, medo dhatu kshaya- pleeha vriddhi, majja dhatu kshaya- nistoda, shukra kshaya- dourbalya, sadana, angamarda, pureesha vriddhi- atopa, kukshi shula, pureesha kshaya- antra peedana, parshwa peeda, mutra vriddhi- adhmana, mutra kshaya- pipasa lakshanas is seen.

Agni is manda. Avipakam, sarva gatra sadanam, alpa bala, sroto rodha, bala bhramsha, anila moodhata, mala sanga, aruchi and apakti are the **ama** lakshanas seen in this subject. In **ojo visramsa**- angamarda is seen, **ojo vyapat**- glani is seen and in **ojo kshaya**- durbala is seen.

Sroto dusti pareeksha-in anna vaha srotas- avipaka, arochaka and anannabhilasha are seen. With respect to rasa vaha srotas- aruchi, aasyavairasya, arasajnata, angamarda, jwara and sada are seen. Rasa vaha srotas- agni nasha, rakta vaha srotas- pliharoga, gulma and kamala, mamsa vaha srotas- arbuda, asthi vaha srotas- shula and in purisha vaha srotas- krichra alpaalpa and grathita pureersha are seen.

Examination of cardio vascular system, respiratory system, skin, nervous system, locomotor system and renal and urogenital system showed no significant abnormalities. On examination of **gastro intestinal system**, in inspection distended abdomen was found. On superficial palpation, tenderness was present in right hypochondriac, right lumbar, epigastric and left hypochondriac regions. Rebound tenderness was positive. On deep palpation, tenderness increased. On percussion, shifting dullness was positive.

Recent **laboratory investigations** [26/02/2024] showed these values-In CBC, Hb%- 13.4%, total count- 4790 cells/cumm, polymorphs- 65%, lymphocytes- 25%, eosinophils- 2%, monocytes- 8%, basophils- 0%, ESR- 20mm/hr, RBC count- 4.36 million/ cumm, platelet- 0.98 lakhs/cumm, HCT- 40.20%, MCV- 92.20%, MCH- 30.70%, MCHC- 33.30% and CRP-7.2 mg/dl. In LFT, Serum bilirubin total- 1.20 mg/dl, direct bilirubin- 0.2 mg/dl, SGOT-68 U/L, SGPT- 50 U/L, ALP- 163 U/L, total protein- 7.6 gms/dl, albumin- 2.70 gms/dl, globulin- 5 g/dl. In RFT, Urea- 26 mg/dl, Serum Creatinine- 0.6 mg/dl, sodium- 137 mmol, potassium- 4 mmol, chlorides- 108 mmol, ionic calcium- 4.3 mg/dl. AFP values- 15.677 IU/ml. Tumor size as per USG abdomen and pelvis- 3.3*2.5 cms.

Samprapti ghatakas- Doshas involved in this disease are tridoshas and dushyas affected are sapta dushyas. Rasa, rakta, mamsa, meda, asthi, majja, shukra, udaka and purisha vaha are the srotas affected. All 4 varieties of sroto dushti prakaras are seen in this subject. That is, atipravritti, sanga, sira granthi and vimargagamana. Sroto dushti lakshanas are shola, udaraabhivridhi, udara shula, trishna and dourbalya. Jataragnidushtijanya and dhatwagnidustijanya ama are seen and agni is in manda Avastha. Udbhava sthana is amapakwashaya, undergoes sanchara in sarva rasayani, adhisthana in udara, roga bala is pravara, rogi bala is madhyama, vyakta sthana is udara, comes under abhyantara and madhyama roga marga. Vyadhi vinishchaya is nichaya gulma.

INTERVENTION-

Deepana, pachana and kosta shodhana with NABBK Kashaya, 50 ml BD B/F with 50 ml sukhoshna jala for 7 days.

Later on, matra basti was planned with Panchgavya Ghrita, 75 ml per day in the morning soon after having breakfast and after a gap of 14 days again, second course of matra basti with Panchagavya Ghrita, 75 ml per day was given in the morning soon after having breakfast for 7 days.

1 st sitting	Deya kala	Pratyagamana kala	2 nd sitting	Deya kala	Pratyagamana kala
Day 1	10:30 AM	1:30 PM	Day 1	9:00 AM	4:00 PM
Day 2	11:00 AM	4:00 PM	Day 2	10:00 AM	6:00 PM
Day 3	10:45 AM	3:00 PM	Day 3	10:20 AM	8:00 PM
Day 4	10:50 AM	4:00 PM	Day 4	10:15 AM	7:00 PM
Day 5	10:30 AM	6:00 PM	Day 5	10:20 AM	6:00 PM
Day 6	10:10 AM	8:00 PM	Day 6	10:30 AM	8:00 PM
Day 7	10:05 AM	7:00 PM	Day 7	10:25 AM	7:00 PM

Rasayana with Kamalantaka Loha, 250 mg BD A/F with Ashwagandha Arka anupana, 25 ml BD A/F for 48 days.

For rasayanartha and virechanartha, Chulika Vati, 250 mg capsule was given once in 3 days in morning in empty stomach for 48 days.

Days	No of vegas
Day 1	7
Day 4	8
Day 7	6
Day 10	10
Day 13	11
Day 16	6
Day 19	8
Day 22	9
Day 25	9
Day 28	5
Day 31	8
Day 34	10
Day 37	9
Day 40	9
Day 43	9
Day 46	8

RESULTS-**SUBJECTIVE PARAMETERS-**

Based on QLQ HCC18 copyright 2002 Eortc study group on quality of life-

Parameters	Before Treatment	After Treatment
1] Did you feel thirsty	3	2
2] Have you had problems with your sense of taste	2	1
3] Have you lost your muscles from your arms or legs?	1	1
4] Have you had abdominal swelling?	3	1
5] Have you been considered by the appearance of your abdomen?	3	1
6] Have you been considered by your skin or eyes being yellow?	1	1
7] Have you had itching?	1	1
8] Have you had pain in your shoulder?	1	1
9] Have you had abdomen pain?	4	1
10] Have you had fevers?	3	1
11] Have you had chills?	3	1
12] Have you worried about getting enough nourishment?	2	1
13] Have you felt full up too quickly after beginning to eat?	3	1
14] Have you been worried about weight being too low?	1	1
15] Have you been less active than you would like to be?	2	1
16] Have you found difficult to finish things?	1	1
17] Have you needed to sleep during the day?	1	1
18] Has the disease or treatment had any effect on your sex life?	1	1
TOTAL SCORE	36	19

OBJECTIVE PARAMETERS-

Parameters	Before Treatment [26/2/2024]	After Treatment [3/5/2024]
Hb%	13.4 gms%	12.3 gms%
Total count	4790 cells/cumm	7520 cells/cumm
Polymorphs	65%	72.3%
Lymphocytes	25%	18%
Eosinophils	2%	2.7%
Monocytes	8%	6.6%
Basophils	0%	0.3%
ESR	20 mm/hr	18 mm/hr
RBC count	4.36 million/cumm	3.93 million/cumm
Platelet count	0.98 lakhs/cumm	1.16 lakhs/cumm
HCT	40.2%	36.3%
MCV	92.2%	92.4%
MCH	30.7%	31.3%
MCHC	33.3%	33.9%
CRP	7.2 mg/dl	7 mg/dl
Serum Bilirubin total	1.2 mg/dl	0.8 mg/dl
Direct bilirubin	0.2 mg/dl	0.2 mg/dl
SGOT	68 U/L	55 U/L
SGPT	50 U/L	32 U/L
ALP	163 U/L	81 U/L
Total protein	7.6 gms/dl	5.6 gms/dl
Albumin	2.7 gms/dl	2.1 gms/dl
Globulin	5 gms/dl	3.5 gms/dl
Urea	26 mg/dl	28 mg/dl
Creatinine	0.6 mg/dl	0.6 mg/dl
Sodium	137 mmol	136 mmol
Potassium	4 mmol	3.7 mmol
Chlorides	108 mmol	107 mmol
Ionic calcium	4.3 mg/dl	4.3 mg/dl
AFP	15.677 IU/ml	9,19 IU/ml
Tumor size	3.3*2.5 cms	3.5*2.1 cms

DISCUSSION-

Hepatocellular Carcinoma is a pittasthanagata tridoshajanya, saptadhatu dushtijanya, amaja, avaranaja, agni and ojudushtijanya vyadhi. Rasayana prayoga should work in such a way that it corrects ama and agni present at each dhatu level by doing tridosha shamana and improving the quality of ojus.

NABBK Kashaya³ contains Nimba, Amrita, Bhumyamalaki, Bhringaraja and Katuki. It was given for the purpose of deepana pachana and kosta shodhana. This kashaya is tikta rasa pradhana Kashaya anurasa yoga. It is having laghu ruksha guna, undergoes katu pradhana madhura vipaka. It is a sheeta veerya yoga. Due to the effect of tikta rasa, jwara, trishna and souhityasya asahatwam symptoms are relieved. Kashaya rasa is having shleshma rakta pitta shamana action through which bleeding from upward tract [through esophageal varices] and downward tract [through hemorrhoids] are relieved. Due to the effect of laghu guna, apakwa doshas are digested quickly and hence relieves agnimandya, souhityasya asahatwam and udarabhivridhi. Ruksha guna is a parama kapha hara and does shoshana of kleda, hence shoshana of jala which is accumulated in udara. Hence relieves udarabhivridhi. Katu pradhana Madhura vipaka has agni Deepana, ashana rochana, kandu vinashana, krimi harana, shonita sangha bhinatti and shleshma shamana actions. Madhura vipaka has ayushya, indriya prasada, bala kara, varna kara, pitta visha marutaghna, Trishna daha prashamana, balya, preenana, brimhana and sthairya kara actions. Hence reducing dourbalya, trishna and preventing further growth of tumor. Phytochemical screening of NABBK Kashaya showed, it is rich in carbohydrates, saponins, flavonoids, steroids, terpenoids, alkaloids, protein and amino acids and phenols. This shows it is having antiinflammatory, analgesic, apoptotic, antiproliferative, antioxidant, anti tumor, apoptotic, immune modulatory and antiangiogenetic actions. Hence breaks the samprapti of HCC.

Kamalantaka Loha⁴ is a rasayana yoga which contains rasoushadhis like loha Bhasma, abhraka Bhasma, mandura Bhasma and vanga Bhasma and kashtoushdhis like ajamoda, shunti, pippali, gaja pippali, pippali mula, Gandha prasari, daruharidra, chavya, yavanika, chitraka, katphala, rasna, devadaru, haritaki, vibhitaki, amalaka, rasanjana and ativisha. It has bhavana dravyas like kesharaja, bhringaraja, somaraja and mandukaparni. Here, 12 out of 26 dravyas in this yoga has katu rasa, 14 dravyas has tikta rasa and 6 dravyas has Kashaya rasa. 15 out of 26 dravyas has laghu guna, 11 out of 26 dravyas has ruksha guna. 7 out of 26 dravyas undergoes Madhura vipaka and 12 dravyas undergo katu vipaka. 17 out of 26 dravyas has ushna veerya. 5 out of 26 dravyas does Tridosha shamana, 5 out of 26 dravyas does kapha pitta shamana and 10 out of 26 dravyas does kapha vata shamana. So this yoga is basically tikta rasa pradhana katu Kashaya anurasa yoga, it is having laghu ruksha guna pradhana, undergoes katu and Madhura vipaka, ushna veerya and does Tridosha shamana. Tikta rasa does arochakaghna, vishaghna, krimighna, kandughna, trishnaghna and jwaraghna. Hence does shamana of most of the lakshanas in HCC. Kashaya rasa is having samshamana, sangrahi, stambana, shleshma rakta pitta shamana. Hence does stambana of adho pravritta dosha in a subject who is excessively debilitated. Katu rasa does agni Deepana, ashana rochana, kandu vinashana, krimi harana, shonita sangha bhinatti and shleshma shamana. Laghu guna helps to digest the apakwa doshas quickly because it undergoes sheeghra paka and does kapha shamana hence mitigates kapha pradhana lakshanas like chardi, kandu, asya samsrava and hrillasa. Ruksha guna is parama kapha hara and has shoshana shakti hence does

shoshana of excessive kleda. Katu pradhana Madhura vipaka suggests it does amapachana and sapta dhatu poshana effect. Ushna veerya of Kamalantaka Loha results in pachana of doshas and does swedana karma hence jwaraghna effect. Phytochemical screening of Kamalantaka Loha showed, it is rich in carbohydrates, saponins, tannins, flavonoids, steroids, alkaloids, proteins and amino acids, phenols and glycosides. Inorganic analysis showed this yoga contains calcium, sodium, potassium, iron and chlorides.

Chulika Vati⁵, a rasayana yoga which contains rasoushadhis like parada, gandhaka, haratala and tankana and kashatoushadhis like vatsanabha, shunti, maricha, pippali, haritaki, bibhitaki, amalaka, jayapala and bhavana Dravya, bhringaraja. It is a katu rasa yoga. 7 out of 14 dravyas shows ruksha guna, 8 out of 14 dravyas shows laghu guna and 5 out of 14 dravyas shows teekshna guna. 6 out of 14 dravyas in total undergoes Madhura vipaka, 3 out of 14 dravyas undergoes katu vipaka. It is an ushna veerya yoga. 5 out of 14 dravyas shows Tridosha shamana action, 3 out of 14 dravyas shows kapha vata hara and kapha pitta hara actions. So in total, Chulika Vati is a katu rasa, ruksha, laghu and teekshna guna pradhana yoga and undergoes Madhura vipaka, has ushna veerya and does Tridosha shamana. Katu rasa does agni Deepana, ashana rochana, kandu vinashana, krimi harana, shonita sangha bhinatti and shleshma shamana. Laghu guna helps to digest the apakwa doshas quickly because it undergoes sheeghra paka and does kapha shamana hence mitigates kapha pradhana lakshanas like chardi, kandu, asya samsrava and hrillasa. Ruksha guna is parama kapha hara and has shoshana shakti hence does shoshana of excessive kleda. Teekshna guna has shodhana shakti, hence does mala shodhana and jalodara nashana. Madhura vipaka shows bala varna kara, ojaskara and dhatu poshana effect. Ushna veerya of this yoga results in swedana and ama pachana actions. Inorganic analysis of Chulika Vati shows it is rich in calcium, sodium, iron, chloride and phosphate. Calcium ions [Ca²⁺], sodium ions [Na⁺], chloride ions [Cl⁻] and ferric ions [Fe³⁺] shows anti proliferative, anti apoptotic and immune modulatory actions. Calcium binding proteins [eg: calmodulin], Sodium potassium ATPase inhibitors [egouabain], hypochlorous acid [HOCl] and ferrous ions [Fe²⁺] shows anti tumor and antiinflammatory actions. Specific phosphate constituents like phosphate ions [PO₄³⁻], phosphoryl groups [-PO₃H₂], phosphodiester bonds [-O-PO₂-O-] shows anti proliferation, apoptotic induction, antiangiogenesis, immunomodulation, anti inflammation and antioxidant activity.

Panchagavya Ghrita⁶, a rasayana yoga contains go ghrita, go ksheera, go mutra, go dadhi and go shakrit rasa is having Madhura rasa, Sowmya and mridu guna, sheeta veerya yoga and undergoes Madhura vipaka. It does predominantly vatapitta hara. Overall the combination is Tridosha balancing. But the effect of cow urine is profound and over powering. So it tilts the formula more towards balancing kapha dosha. Madhura rasa of Panchagavya Ghrita shows poshana and vardhana of rasa, rakta, mamsa, meda, asthi, majja, ojas and shukra. It has even ayushya, indriya prasada, bala varna kara, pitta visha marutaghna effect. Trishna daha prashamana, jeevana, brimhana, sthairyakara effects. Has mridu guna hence does shlathana of doshas which means reduces compactness of tumor and does mridu karana of yakrit which has become excessively ruksha. Sheeta veerya of ghrita results in pitta shamana and stambana of ati pravritta dosha in excessively debilitated subjects. Madhura vipaka in whole has brimhana effect. TLC of Panchagavya Ghrita showed it is rich in steroids, terpenoids, flavonoids, alkaloids, phenols and tannins. Ursodeoxycholic acid [UDCA], Deoxycholic acid [DCA], Estradiol and testosterone in steroids shows anti tumor, antiinflammatory and antioxidant effects.

Limonene, perillyl alcohol, beta caryophyllene and ursolic acid in terpenoids shows anti tumor, antiinflammatory, antioxidant, antiangiogenic, pro apoptotic and immunomodulatory effects. Quercetin, epigallocatechin gallate, apigenin and genistein in flavonoids shows anti proliferative, antiangiogenic, pro apoptotic, anti tumor, antiinflammatory, antioxidant, antimetastatic and immunomodulatory actions. Berberine, vinblastine, caffeine and camptothecin in alkaloids shows antitumor, antiinflammatory, antioxidant, antiangiogenic and pro apoptotic effects. Specific phenols like resveratrol, quercetin, ferulic acid and curcumin shows antitumor, antiinflammatory, antioxidant, antiproliferative and pro apoptotic effects. Gallic acid, ellagic acid, punicalagins and catechins in tannins shows anti proliferative, apoptotic, immunomodulatory, anti inflammatory and antioxidant properties.

Ashwagandha⁷ has katu, tikta, Kashaya rasa, snigdha and laghu guna, ushna veerya and Madhura vipaka. Katu rasa does agni Deepana, ashana rochana, kandu vinashana, krimi harana, shonita sangha bhinatti and shleshma shamana. Tikta rasa does arochakaghna, vishaghna, krimighna, kandughna, trishnaghna and jwaraghna. Hence does shamana of most of the lakshanas in HCC. Kashaya rasa is having samshamana, sangrahi, stambana, shleshma rakta pitta shamana. Hence does sthambana of adho pravritta dosha in a subject who is excessively debilitated. It contains snigdha guna hence does mardavata of shareera, does bala varna kara and vata hara. Laghu guna helps to digest the apakwa doshas quickly because it undergoes sheeghra paka and does kapha shamana hence mitigates kapha pradhana lakshanas like chardi, kandu, asya samsrava and hrillasa. . Ushna veerya of Ashwagandha results in pachana of doshas and does swedana karma hence jwaraghna effect. Madhura vipaka does sapta dhatu poshana. **Arka of ashwagandha**⁸ is laghu for digestion hence does apakwa dosha pachana in a short while. Distillate of *Withania somnifera* contains various bioactive compounds which acts on Hepatocellular Carcinoma are Withanolides [steroidal lactones] like Withanolide A, Withanolide D and Withanolide E. Alkaloids like withanine, somniferine and ashwagandhine. Flavanoids like kaempferol, isorhamnetin and quercetin. Saponins like withanoside IV and withanoside VI. Glycosides like withanolide glycosides. Withanolide A inhibits HCC growth and angiogenesis. Withsnolide S suppresses HCC metastasis. Withanolide D induces apoptosis in HCC cells. Withanine inhibits HCC growth and angiogenesis. Somniferine induces apoptosis in HCC cells. Ashwagandhine suppresses HCC metastasis. Kaempferol inhibits HCC growth and angiogenesis. Quercetin induces apoptosis in HCC cells. Isorhamnetin suppresses HCC metastasis. Withanoside IV inhibits HCC growth and angiogenesis. Withanoside VI induces apoptosis in HCC cells. Somnioside A suppresses HCC metastasis. Withanolide A glycoside inhibits HCC growth and angiogenesis. Somnioside A glycoside induces apoptosis in HCC cells. Withanoside IV glycoside suppresses HCC metastasis.

In **subjective parameters**, did you feel thirsty scale decreased from 3 to 1. Thirst occurs in Hepatocellular Carcinoma due to impaired liver function that results in reduced detoxification and metabolism leading to fluid imbalance. Scarring and fibrosis cause fluid retention and ascites which results in electrolyte imbalance. Tumor necrosis results in release of pro inflammatory cytokines that stimulates thirst. Vayu located in kloma gets interrupted with kapha and udaka dhatu increases ambu quantitatively in obstructed channels of circulation. Due to increased ambu, dooshita kapha and vata, trishna manifests. NABBK Kashaya is a tikta pradhana Kashaya anurasa yoga which undergoes katu pradhana madhura vipaka. Hence clears srotas by doing

sandhukshana of agni at jataragni, dhatwagni and bhutagni levels. Jaypala, one of the main ingredients in Chulika Vati, clears the srotas by doing rechana thereby correcting metabolism and fluid imbalance. Antioxidant, anti-inflammatory, anti tumor, apoptotic and antiangiogenetic effects seen in Kamalantaka Loha, Chulika Vati, NABBK Kashaya, Panchagavya Ghrita and Ashwagandha Arka results in decreased release of proinflammatory cytokines which stimulates thirst.

Have you had problems in the sense of taste scale decreased from 2 to 1. In nichaya gulma, arochaka is one of the symptoms which occurs due to agni vaishamya. It occurs due to chronic inflammation in carcinomatous cells which reduces appetite and creates problems in sense of taste. Impaired liver function and liver cirrhosis contributes equally to create problems in sense of taste. Nutrient deficiencies [e.g., zinc, vitamin B12], electrolyte imbalance, insulin and glucose metabolism alterations cause problems in sense of taste. NABBK Kashaya contains tikta and Kashaya rasa dravyas which does agni deepana and ama pachana hence correcting liver metabolism and problems in sense of taste. Kamalantaka Loha contains amla dravya like amalaki which has ruchya property and this yoga has loha Bhasma which corrects nutrient deficiencies i.e., zinc and vitamin B12 deficiencies. Chulika Vati because of its rechana effect, removes excess fluid from the body thereby correcting electrolyte imbalances.

Have you had abdomen swelling reduced from 3 to 1. Abdomen swelling in HCC is due to buildup of fluid in the abdomen. It is due to factors like, a] Liver enlargement: the liver is enlarged due to cancer. B] Fluid leakage- the liver produces proteins that keep fluid in the blood stream, but when liver is damaged by cancer, fluid can leak out and pool in the abdomen. C] Blocked blood vessels- cancer can block blood vessels which can force fluid out of them. D] Blocked lymph vessels- cancer can block lymph vessels which can prevent fluid from draining properly. E] Irritated lining- cancer cells can irritate the lining of the abdomen causing it to produce too much fluid. Due to ahita ahara and vihara sevana in mandagni and ksheena Avastha, Vayu located in kloma gets interrupted with kapha and udaka dhatu increases ambu quantitatively in obstructed channels of circulation. Chulika Vati has got jayapala as the major ingredient. It reduces fluid accumulation due to rechana effect. Even it has antiinflammatory activity, enhances lymphatic drainage facilitating fluid removal, protects liver cells potentially improving liver function and does angiogenesis inhibition. Hence, jayapala not only acts on reducing fluid levels but also acts on tumor through its antiinflammatory and angiogenesis inhibition action.

Have you been considered by the appearance of your abdomen reduced from 3 to 1. Subject of Hepatocellular Carcinoma often notices changes in their abdomen's appearance which can be distressing and affect their quality of life. Common concerns are abdomen swelling, visible tumors or masses, changes in skin texture or colour, increased waist circumference and discomfort. It psychologically impact their body image issues creating low selfesteem, anxiety and depression, reduced confidence and social withdrawal. In order to reduce abdominal swelling, Chulika Vati plays a major role in reducing fluid accumulation through rechana action. Majority of the drugs present in NABBK Kashaya, Panchagavya Ghrita, Chulika Vati, Kamalanataka Loha and Ashwagandha Arka have anti tumor, apoptotic and antiinflammatory effect. Hence, inhibits tumor to grow further and even reduces the size of the tumor.

Have you had abdomen pain score reduced from 4 to 1. Abdomen pain in Hepatocellular Carcinoma is due to various reasons. a] Visceral involvement- a primary or metastatic lesion in the abdominal or pelvic viscera can cause visceral pain. This pain can feel dull, aching or cramp like. b] Parietal pain- the walls of the liver can stretch causing a sharp, localized pain. c] Liver enlargement- liver enlargement or hepatomegaly can cause abdominal pain and bloating. d] Fluid accumulation- fluid accumulation in the abdomen causes abdominal pain and bloating. Shula is one of the main and presenting complaints of nichaya gulma. It presents with varieties of pain like toda, bheda, sphurana, aayama, sankocha, supti and harsha. This toda can be aniyata vipula toda or aniyata anu toda. Due to antiinflammatory, antioxidant, antiangiogenetic, apoptotic, antitumor effects of phytochemicals seen in Chulika Vati, NABBK Kashaya, Panchagavya Ghrita, Kamalantaka Loha and Ashwagandha Arka like Saponins, tannins, flavonoids, steroids, alkaloids, proteins and amino acids, phenols and glycosides does relief in abdomen pain.

Have you had fevers score reduced from 3 to 1. In pitta pradhana nichaya gulma, jwara is one of the presenting lakshanas which is due to activation of immune cells [e.g., macrophages, T cells], release of pyrogens [fever inducing substances] and increased prostaglandin and leukotriene production. Systemic factors like neutropenia and malnutrition equally contribute to cause fever. In pitta pradhana nichaya gulma, jwara is one of the presenting lakshanas. Here, jwara is ama jwara. Because majority of the subjects presented with ama lakshanas like arochaka, avipaka, aalasya with jwara. Hence ama pachana is must and should in these cases. NABBK Kashaya due to its tikta rasa does ama pachana and jwara harana. There by it reduces the release of prostaglandin and leukotriene production.

Have you had chills score reduced from 3 to 1. In kapha pradhana nichaya gulma, sheeta jwara is one of the presenting lakshanas which is due to activation of immune cells [e.g., macrophages, T cells], release of pyrogens [fever inducing substances] and increased prostaglandin and leukotriene production. Systemic factors like neutropenia and malnutrition equally contribute to cause fever with chills. Even in this scale, NABBK Kashaya equally contribute to reduce chills by its tikta rasa.

Have you worried about getting enough nourishment score reduced from 2 to 1. Due to agni mandya, poshya and poshaka amsha of rasa dhatu is not produced properly. This vikriti occurs not only occurs at the level of rasa dhatu. Here, sapta dhatus equally contribute in creating vikriti. Agni dusti results in improper absorption of nutrients like vitamins [e.g., vitamin D, B12] and minerals [e.g., iron, zinc]. Hence there is reduced nourishment and even due to metabolic changes like cachexia, muscle and fat loss and anorexia, there is reduced nourishment. Panchagavya Ghrita contains equal amount of go shakrit rasa, go mutra, go dhadhi, go ghrita and go ksheera. Here go mutra and go shakrit rasa does agni Deepana due to its katu rasa and ushna veerya and there by increasing absorption of necessary nutrients. Go dadhi, go ghrita and go ksheera does poshana to sapta dhatus. Loha Bhasma and mandura Bhasma present in Kamalantaka Loha and inorganic elements like calcium, sodium, iron and phosphate present in Chulika Vati provides beneficial effects in reducing vitamin and mineral deficiencies. Ashwagandha is a tridosha shamaka Dravya. Does deepana, pachana and brimhana all alone.

Have you felt full up too quickly after beginning to eat score reduced from 2 to 1. In the poorvaroop of nichaya gulma, souhityasya asahatwam is mentioned. Because liver which is a greatest source of metabolism is hampered resulting in impaired detoxification and metabolism. Ascites, cirrhosis, tumor growth and tumor related hormones like decreased leptin [appetite regulation] and increased ghrelin [appetite suppression] causes decreased appetite and feeling of fullness too quickly after beginning to eat. Jayapala in Chulika Vati reduces abdominal fullness by rechana effect. NABBK Kashaya by Deepana and pachana effect corrects metabolism and reduces fullness of abdomen. Majority of drugs present in Kamalantaka Loha have katu and tikta rasa, does deepana and pachana there by correcting metabolism.

Have you been less active than you would like to be score reduced from 2 to 1. Dourbalya is mentioned in poorva roopa of nichaya gulma. This manifests due to anemia, nutritional deficiencies, chronic inflammation, release of proinflammatory cytokines by the tumor and liver dysfunction. Creating bala is the contribution of sapta dhatu with its good sara. Here combination of NABBK Kashaya, Panchagavya Ghrita, Chulika Vati, Kamalantaka Loha and Ashwagandha Arka plays a pivotal role in doing dhatu poshana, rasayana and brimhana effect.

In **objective parameters**, Hb percentage was reduced after treatment. It is the common side effect of Transarterial Chemoembolization procedure.

Polymorphs count was high before and after treatment. This shows disease progression and also there is an initial increase in the polymorphs count soon after Trans Arterial Chemoembolization therapy due to inflammatory response triggered by embolization.

Lymphocytes count was decreased after treatment which shows the effect of Trans Arterial Chemoembolization procedure.

Slight reduction in the ESR was seen which shows antiinflammatory, antioxidant effect of NABBK Kashaya, Panchagavya Ghrita, Kamalantaka Loha, Chulika Vati and Ashwagandha Arka. Still, ESR is not in normal range which shows progression of the disease.

With respect to platelet count, there is slight increase in platelet count. This is due to antiinflammatory, antioxidant, immune modulatory actions of NABBK Kashaya, Panchagavya Ghrita, Kamalantaka Loha, Chulika Vati and Ashwagandha Arka. But still the count is low. This is due to the effect of Trans Arterial Chemoembolization.

CRP count remained high before and after treatment. This is due to side effect of Trans Arterial Chemo Embolization procedure. Factors contributing to CRP elevation are inflammation, tumor necrosis and liver injury.

Serum bilirubin was high before treatment became normal after treatment. This is due the effect of NABBK Kashaya, Kamalantaka Loha and Chulika Vati. NABBK Kashaya is a tikta, Kashaya rasa yoga hence corrects liver metabolism. Chulika Vati contains jayapala as the main ingredient. This jayapala has rechana action and combats udarabhivridhi complaint and indirectly corrects liver metabolism. Kamalantaka Loha majorly contains loha Bhasma, mandora Bhasma which corrects rakta dhatu and hence its moola sthana i.e., yakrit.

SGOT count which was high before treatment became normal after treatment. This is due to tikta and Kashaya rasa present in NABBK Kashaya, Chulika Vati and Kamalantaka Loha and even due to antiinflammatory, antioxidant and immune modulatory actions of these yogas. There are evidences showing Trans Arterial Chemoembolization procedure can help to reduce liver enzyme levels by shrinking the tumor and alleviating liver congestion.

ALP levels which was high before treatment became normal after treatment. The same explanation given for SGOT count holds good even for this.

Serum albumin count remained low before and after treatment. This is the side effect of Trans Arterial Chemoembolization procedure and indicates disease progression.

Alpha fetoprotein levels which was high before treatment became normal after treatment. This is due to the combined effect of NABBK Kashaya, Panchagavya Ghrita Matra basti, Chulika Vati, Kamalantaka Loha and Ashwagandha Arka which is having anti-inflammatory, antioxidant, antitumor, antiangiogenic, apoptotic and immune modulatory effect.

Even there is no further growth in tumor size and again it is due to combined effect of NABBK Kashaya, Panchagavya Ghrita Matra basti, Chulika Vati, Kamalantaka Loha and Ashwagandha Arka which is having anti-inflammatory, antioxidant, antitumor, antiangiogenic, apoptotic and immune modulatory effect.

CONCLUSION-

Hepatocellular Carcinoma is a primary malignant tumor of the liver, characterized by uncontrolled growth and proliferation of hepatocytes leading to liver dysfunction and potentially lifethreatening complications. Nearest correlation for Hepatocellular Carcinoma in Ayurveda is Nichaya gulma. Combination of NABBK Kashaya, Panchagavya Ghrita matra basti, Chulika Vati, Kamalantaka loha and Ashwagandha Arka helped in reducing the symptoms mainly udarabhivridhi, udara shula, agni mandya, Trishna, jwara and dourbalya through its antiinflammatory, antioxidant, antitumor, anti angiogenic and immunomodulatory actions thereby improving Quality of Life, symptoms and managing side effects and no further growth in tumor size. With respect to life expectancy, this subject lived four months longer than what expected. This is the contribution of Ayurvedic science in managing Hepatocellular Carcinoma subjects, first of its kind. Further large scale studies are needed.

REFERENCES-

- 1] Harrison's principles of internal medicine. J Larry Jameson, MD, Dennis Kasper, Dan L Longo, Anthony.S.Fauci, Stephen.L.Hauser, Joseph Loscalzo editors. 20th edition, chapter 78, p578.
- 2] Harrison's principles of internal medicine. J Larry Jameson, MD, Dennis Kasper, Dan L Longo, Anthony.S.Fauci, Stephen.L.Hauser, Joseph Loscalzo editors. 20th edition, chapter 78, p578.

3] Shri Bhavamishra, Bhavaprakasha, Hindi commentary by Shree brahma, Edited by Vidyitini Sankara Misra and shree roopa Lal Ji Vaisya, 1st part, Varanasi, Chaukambha Sanskrit Sansthan, 1990,pp329-369,460; 470.

4] Govinda Dasji Bhashagratna, Bhaishajya ratnavali, Commented upon by Vaidya Shri Ambika Datta Shastri. English translation by Dr Kanjiv Lochan, Pandu roga, verse 44-50, p719-720.

5] Govinda Dasji Bhashagratna, Bhaishajya ratnavali, Commented upon by Vaidya Shri Ambika Datta Shastri. English translation by Dr Kanjiv Lochan, 2nd volume, Udara roga, verse 87-89, p583-584.

6] Acharya Agnivesha, Charaka Samhita, Chakrapani teeka, Chikitsa sthana, 10th chapter, verse 16-17, p475.

7] Ayurvedic Pharmacopoeia of India. Part 2. First English Edition. Government of India, Ministry of Health and Family welfare, Department of Indian Systems of Medicine and Homeopathy 2000.

8] Baamsabareli nivasi pandita. Mukundaramakrita Hinditeekaasahita. Arka prakasha, Khemaraj Shreekrishnadas prakashana. Mumbai-4.

