The Assessment of Yoga Therapy on Liver Functions

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Introduction:

The word Yoga has derived from the Sanskrit language; according to which, the word yoga has two roots, *yuj and yujir. Yuj* means Samadhi, *yujir* means union. Ṛoga is originated in India thousands of years ago. Great Indian *Zcis* developed Yoga. The aim of Yoga is to attain the highest state of concentration i.e., *Samādhi.* Maharṣi Patañjali, "The Father of Yoga", synthesized and compiled various aspects of Yoga systematically in his "Yoga *Sutras*". It consists of a total 195 sutras in four chapters. Maharṣi Patañjali says *"atha yogānuśāsanam"*. This indicates that Yoga has to be experienced by the practices taught by the teacher, not merely by discussions. Aṣṭānga Yoga is the one, which gives the practical way for self-realization. By the practice of the different limbs of yoga the impurities being destroyed, knowledge becomes effulgent, till the maximum limit.

According to Maharṣi Patañjali, The disease, mental laziness, doubt, lack of enthusiasm, lethargy, clinging to sense-enjoyments, false perception, non-attaining concentration and falling away from the state when obtained are the obstructing destructions – *Vyādhi styāna samṣaya pramāda ālasya avirati bhrāntidarśana ālabdhabhūmikatva anavasthitatvāni cittavikcepāh te antarāyāṇ.* || P.Y.S (I-30) ||

By the practice of the different parts of Yoga, the impurities being destroyed, knowledge becomes effulgent up to discrimination - *Yogāngānuṣṭhānāt aśuddhikṣaye jñānadīptiḥ āvivekakhyāteḥ* || P.Y.S (II-28) ||

The misery which is not yet come is to be avoided - *Heyaṇ duḥkham anāgatam* || P.Y.S (II-16) ||

By throwing out and restraining the Breath one can pacify the citta - *Pracchardana vidhāraṇābhyāṁ vā prāṇasya* || P.Y.S (I-34) ||

By doing Samyama on the Navel circle, (comes) the knowledge of the constitution of the body - *Nābhicakre kāyavyūhajñānam* || P.Y.S (III-30) ||

The Gheraṇda Samhitā

The Gheraṇda Samhitā explains, by the constant practice of Vamana Dhauti, one can ward off diseases due to Phlegm and Bile - *nityamabhyāsayogenakaphapitta nivārayet* || Gh.S (I-38) ||

Vastra Dhauti cures tumour, fever, enlarged spleen and disorders of phlegm & bile - *Gulmajvara plīhakuṣṭhakapittam vinaśyati* || Gh.S (I-40) ||

Svatmarama explains, Nauli intensifies weak (gastric) fire/heat, restores digestion - *Mandāgnisandīpanapācanādi Sandhāyikānandakarī sadaiva Aśeṣadoṣamayaś osaṇī ca Haṭhakriyā mauliriyam ca nauliṇ* || H.P (II-34) ||

Matś yendrāsana in Haṭhapradīpikā as, Matśyendrāsana stimulates the gastric fire in the stomach - *Matś yendrapīṭham jaṭharapradīptim pracaṇḍ*

arugmaṇḍ
alakhaṇḍ
anāstram abhyāsataṇḍ kuṇḍ
alinīprabodham candrasthiratvam ca dadāti pumsām || H.P (I-27) ||

The Paścimottānāsana kindles the gastric fire, reduces belly and bestows the health upon the aspirants - *Udayam jamharānalasya kuryādudare kārśyamarogatām ca puṃsām* || H.P (I-29) ||

Mayūrāsana kindles the gastric fire and completely digests all the unwholesome and over eaten food, even poison - *Janayati jamharāgnim jārayetkālakūmam* || H.P (I-30) ||

The śītalī Prāṇāyāma destroys diseases like glandular enlargement and disorders of the spleen, fever, disorders of bile, hunger and thirst – *Gulmaplīhādikānrogānjvaram pittam kṣudhām tṛṣām.....*|| H.P (II-58) ||

Liver is a largest organ in the body. It is a biological kitchen of the body where the metabolism of Carbohydrates, Proteins, Lipids, Vitamins and Minerals takes place. Also, it synthesizes Proteins, stores Vitamins and is involved in the detoxification. The poor functioning of the Liver is due to change of Life-style, wrong dietary habits, lack of physical activity, smoking, Alcohol consumption, drugs etc. Also, liver disorders like, Jaundice, Cirrhosis, Hepatitis, can bring change in the Albumin and Globulin levels. One of the ways out is the practice of Yoga, which soothes both mind and body. It has got preventive, promotive and curative aspects and the appropriate use of different limbs of yoga for this purpose is yoga therapy. Various Yogic practices will help to activate the digestive system like – Kriyās, Asana, Prāṇāyāma, Bandha and Mudrā, with objectives as -

1. To find out the effect of selected yogic practices on Liver functions.
2. To find out the overall improvement of the digestive system.
3. To find out the efficacy of Yoga Therapy on Liver functions.

1. Materials and Methods:

The present study was conducted to find out the effect of Yoga Therapy on Liver functions in Industrial employees of the age group between 20 and 50. Twenty employees were selected randomly for the current study. This was divided into two groups. Viz, *experimental* and *Control* equally based on simple random sampling method. Yoga Therapy was given only to the experimental group and their results were compared with Control group. Daily sessions were taken in the evening for about one hour. The data was analyzes using Student paired t–test, to find out the significance of the result.

2. Parameters:

The following parameters were taken for the present study.

■ **Globulin:**

Globulins are the proteins that can be divided into three fractions: Alpha (j), Beta (ā) and Gamma (ć). Alpha (j) and Beta (ā) cells are made

in the Liver but Gamma is produced by cells of Immunity system. Alpha globulins transport many Hormones, including Cortisol and Thyroxin. The Beta globulins are important in the transport of Lipids (eg, Cholesterol), Fat – soluble Vitamins (A, D, K), Insulin and Iron. The ability to fight infections depends on the Gamma globulin (Immunoglobulin). Normal range of globulin is *2.3 – 3.5* g/dL. This will in elevation state due to chronic infections like – Liver disease, Rheumatoid Arthritis, Ulcerative Colitis, Autoimmune disease, Kidney dysfunction.

- **Alkaline Phosphate:**

Alkaline Phosphate is a hydrase enzyme responsible for removing phosphate group from many types of molecules, including nucleotides, proteins and alkaloids. It is present in all tissues through the entire body particularly concentrated in Liver, bile duct, Kidney, Bones and Placenta. It is a byproduct of Osteoblast activity. This enzyme is released into the blood by the Liver in response to certain diseases, by the bone for healing during fractures. Any condition that affects bone growth or causes increased activity of bone cells can affect ALP level in blood. Normal Range of Alkaline Phosphate (ALP) in adults are *60- 170* U/L. High level of ALP in adults usually means; damaged Liver, Hepatitis, Bone diseases (Paget's disease), Liver cancer, use of Anti – epileptic drugs and during Pregnancy.

- **Evaluation:**

The Liver purifies our blood and maintains the body process. Various Yogic practices help to increase the gastric fire and helps in digestion. It is important to note that practices like asana, Pranayama with relaxation are effective to enhance the functioning of the body even in the healthy individuals without any side effect. In this small study, the globulin and alkaline phosphate have been recorded.

The mean value of globulin reduced from3.31 g/dL to 2.86 g/dL with $p = 0.00087$, which is highly significant. Similarly, alkaline phosphate reduced from 93.3 U/I to 79.3 U/L, with $p = 0.0364$ in the experimental group. On the other hand, contrary to the experimental group, the mean value in control group was not significantly changed.

Thus, the results show improvement in the Liver functioning only in experimental group.

■ CONCLUSION:

On the basis of discussion of results, it can be concluded that Yogic practices have substantially and significantly reduced the level of globulin, alkaline phosphate in the experimental group whereas such changes were not seen in the control group. This implies that the various Yogic practices is the right solution to enhance the functioning of the Liver of an individual. Further, if the study carried out for longer duration, one can find out the effect of Yogic practices in the individuals suffering from Liver diseases.

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