

# Extant Acupressure Therapy for Adept, Painless Recovery and Cure of Ailments

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**Abstract-** Considering long time back or in other words ancestral times, compatible, supportive as well as substitute form of medicines identically CAM played a significant role which denotes complementary and alternative medicines in the healthcare sector of human living. CAM has been investigated and is familiar with having a reliability as well as reputation within every tradition or civilization as well as the society to impart rudimentary treatments and healthcare therapies towards the patients. CAM functions to venture as an improved therapeutic and medicaments recourse in human beings particularly for handling and medicating various diseases with treatments and hence upgrading by ameliorating the quality of living with justified and appropriate contemplation towards the economic facets. Acupressure, particularly studied and one of an investigated CAM, emanated at ancient China and is deployed on the basis of principle of acupoints actuation across meridians that redresses the misproportion and disparity between Qi. Initialization of specified points on meridians is familiar with aiding in the diminishing and reduction of pain in local sites. It also helps in diminishing the pain which is related to various body parts. This analysis followed by investigation scrutinizes different categories, techniques, acupressure devices as well as methodologies that correlate various mechanisms which are intricate with and are related to the acupressure treatment.

**Keywords:-** Acupressure, CAM, acupoints, acupressure devices.

## I. INTRODUCTION

CAM has turned up to be one of the progressive as well as emerging remedial approaches day by day. Precisely on the account of its various remedial hallmarks, CAM has accomplished exceedingly noteworthy authenticity as well as notability beyond the territory of conventional medical facilities as well as the medical systems available. Several manifestations of CAM has been practiced since a long time although approaches like electrotherapy contemporarily gained emergence.[1] Acupressure has been one of the most well-known CAM executions used in implementation globally. It is deployed on rudimentary propositions of stimulation of acupoints beyond the meridians. Mobilization of acupoints is expedited by the utilization of fingers. Due to convenience as well as guarded manual treatment, acupressure is employed by innumerable mankind throughout the entire globe. CAM therapies are also meant for providing a manifesto which will do a predominant role

related to human welfare and health [2]. Acupressure thus helps in reducing the ease of extensive span of health disorders. It is a commendatory treatment that constructively relieves from distinctive pains that helps in managing numerous traits in a diversity of patient or victim population [3][4].

Although acupressure and acupuncture are economical, simple, effective as well as safe therapies but acupressure is much more compatible and compliant to mankind because of its non-invasiveness and needle free nature [5][6]. Acupressure also plays a significant role in restoration of pain and thus promoting self-administration and psychological contentment [7]. It is always necessary to have a considerable recognition about prevailing techniques of acupressure therapy along with justified examination of scientific, meticulous and biomedical scope which is controlled by analysis technically.

## II. ACUPRESSURE

Acupressure has eventually emerged from ancient China [8]. It has been an instrumental measure and has condescending therapeutic prospects to act as an effective measure against diverse diseases. Acupressure is primarily a category of acupuncture and both of them are deployed on the rudimentary essence of activation of acupoints across meridians. In acupressure, the muscular tension is liberated out by the application of pressure at particular acupoints with the help of hands to stabilize the circulation of physiological energy [9], [10]. Furthermore acupressure bear a resemblance to reflexology, where the therapeutic response has been obtained on the basis of work on reflux zone.[11] Acupressure stipulation employment of physical compulsion or pressure on acupoints are oriented along the meridians. Meridians usually are referred to as channels inside the human body that maintains *Qi*. Individually the meridian has a connection with distinct tissues as well the organs of human body. Stimulation of particular point on the meridian fetches relief by reducing pain from various parts of body [12].It is intrinsically pressure point and hand moderated energy ameliorating technique that is contemplated as fruitful measure for satisfying multiple constituents like satisfaction, comforts followed by economy [8],[13]. Collectively acupressure is a needle free, manually operated, cost effective, non-invasive as well as non-

pharmacological relieving method to enhance well-being of mankind.

III. ACUPOINT OR ACUPRESSURE POINTS

A total of human body consists of a collection of pressure points [14]. Acupoint generally refers to the point which is nearer to skin's surface and its stimulation is the primary stride in acupressure [15]. Incitement of distinct acupoints is familiar with extracting effective used in the treatment of diseases [16]. Most areas of needle insertion for acupoints in acupressure are areas having high electrical conductivity on surface of body. Particular acupoints possesses different sensations depending on body parts that usually endure from a specific pain. Implementations of pressure in various areas or points cause various results [17], [18]. According to their location, pressure points exhibit diverse physical effects [19]. Location of respective acupoints on identified meridian is being determined in the terms of cun or body inch(BI). One BI or cun is equal to width of one thumb at base of finger nail [20]. Body inch or cun are generally referred as the AUM or acupressure unit of measurement.

The two major acupoints usually implies to Distal points (DP) as well as local points (LP) these are waged by acupressurists for treating the patients in regular clinical practices. Applications of acupressure on local points exhibits therapeutic responses on autonomic nervous system or ANS. Third variety of acupoints are the tender points (TP) that are present on polymodal receptors and nociceptors. Stimulation of such tender points sensibilizedpolymodal receptors outcomes in improved consequences in relieving pain [21]. In acupressure there are specific tools available like elbows, knuckles, fingers or thumbs. Presently, innumerable elastic bands or acupressure having extended plastic button are obtainable [22].

IV. METHODOLOGY: MECHANISM OF ACTION OF ACUPRESSURE

*Qi*perfuses everything and is the requisite vivacity of life. It is that attribute which helps in determining the state of health of mankind. The customary medicinal attributes which conflicts between each other are Yin and Yang [23]. In accordance with Traditional Chinese Medicine (TCM), acupressure employs pressure for activating distinct acupoints for therapies and invigorating these points fetches in correction of imbalance between various channels through which *Qi* flows to treat diseases subsequently [24]. *Qi* achieves several benefits on therapy by enhancing the functioning of various physiological body systems or Zang-fu in the process through re-equilibrium [25]. Zang-fu is combined expression for internal organs of human body [26]. It is profusely a non-pharmacological engagement on human body for treating broad range of circumstances by application of pressure to particular acupoints [27]. It is eventually the kneading of acupoints performed by the use of thumbs, knuckles, elbows, fingertips or other suitable devices attain fruitful treatment which will last from several hours, hence posting a single treatment [28] [29]. Working mechanism of multi modalacupressure therapy can be illustrated by clarifying miscellaneous theories [30].

In accordance with the Gate Control Theory by Wall and Melzack, acupressure at distinct point proceeds agreeable impulses to brain at the increases rate of four times as compared to painful stimuli. Uninterrupted impulses locks the neural 'GATES' and sedate messages of ache or pain are intercepted or blocked from getting reached to the brain and thus aiding in strengthening the perception threshold of pain of the body [31]. Depending on location of activation or stimulation, generation of pressure stimulates the myelin nerves which are present in the muscles and proceeds the stimulations to higher nerve centre comprising spinal cord, pituitary axis, hypothalamus and midbrain [32]. Furthermore, while considering the regulation of endogenous pain, acupressure evinces potential for influencing predominant somatosensory processing as well as feasibly modifying maladaptive neuroplasticity [33]. Auricular acupressure (AA), is a non-invasive micro-acupuncture technique which is similar as compared to reflexology where endocrine functions' improvement are made effectively. It is also familiar in exerting its effects through stimulation of CNS or Central Nervous System through spinal/cranial nerves on ear auricles [34] [35].

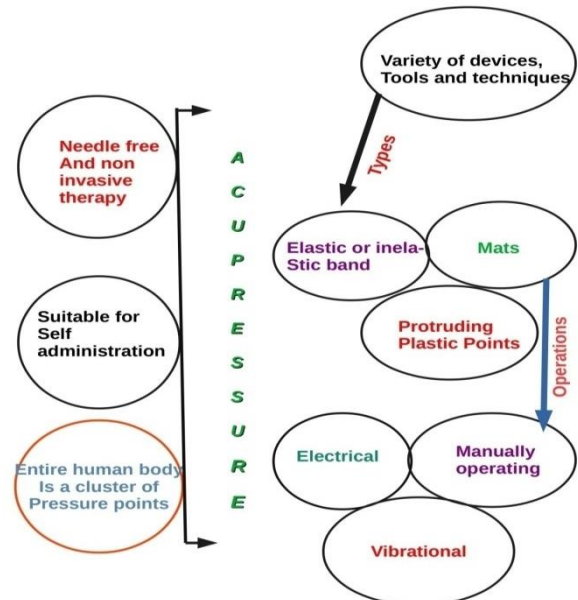


Figure 1:Pictorial Representation

V. RESULTS AND DISCUSSIONS

Biochemical mechanism depicting acupressure as shown in fig(ii) involves activation of acupoints which leads to compounded, complex or composite neuro-hormone and its responses [31]. It presupposes a counterblow among the hypothalamic-pituitary-adrenocortical axis which is leading to excessive production of cortisol thus producing relaxation response [32]. It furthermore modulates physiological response in enhancing the transmittance of endorphin and serotonin to brain as well as specific organs by meridians and nerves [33][34][35]. Succeeding exercises, the changes in concentrations of stress hormones as well as lactic acid are helped by restorative or therapeutic meridian acupressure [36]. Stimulation of acupoints activates the myelinated neural fibers that activate the pituitary gland as

well as the hypothalamus to release  $\beta$ -endorphins from hypothalamus to spinal fluid finally from the pituitary to the blood stream. Thus, sedative and analgesic effect of  $\beta$ -endorphins helps in facilitation of usual respiratory functions for patients [37].

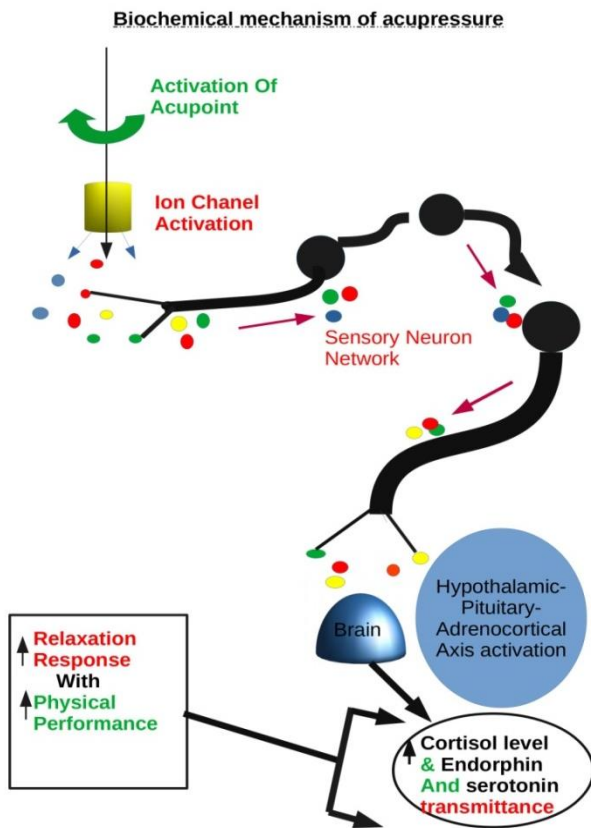


Figure 2: Biochemical technique of acupressure

As per Meridian theory, on activation of acupoints, the region that lies along meridian will get affected, however activating proximate acupoints affects the functioning and operation of local or nearby tissues [38]. Acupressure also mediates NO (nitric oxide) signal which is known for the improvement of local microcirculation through cGMP (cyclic guanosine monophosphate) [39]. It also helps in magnifying physical performances by repressing the molecules of fatigue-inducing in blood [40]. Various spectroscopic methods are prevailing like LDM (Laser Doppler Measurement) and NIRS (Near-infrared spectroscopy) used in investigation of several mechanisms that are associated with acupressure therapy as well as microcirculatory potency. On comparing both, NIRS has turned up to be more sensitive than -LDM in the detection of tissue-in-flow variations as it penetrates with much higher rate in sample [41][42][43]. Acupressure also aids in reduction of PPS (pressure pain sensitivity) as well as pain sensitivity [44].

In most surgical processes and treatments, it plays a significant role in averting surgical haemorrhage thereby stimulating the process of recovery [45].

It also advances rheological blood circulation by decreasing adhesion between the tissues and promoting relaxation as

well as enhancing the activity of parasympathetic nerves [46].

## VI. ACUPRESSURE DEVICES

There are broad spans of acupressure portable devices available in the market. These devices generally are outlined on basis of application ease and patient's comfort. Taking into consideration of patient's need, numerous devices that generate vibrational electrical impulse as well as devices based on vibrational energy are reliable to succor the purpose. Few of the devices that are patented are given in Table 1. Many of the devices that are available employ a sustained level of pressure on a particular pressure point. The limitation which is required for nerve accommodation is the reason for stimulation of action potential in shorter time that further gets diminished swiftly. It leads to short or momentary benefits that are not enough sufficient for causing desirable effects and may conduct or lead to unfavourable side effects. Automatically modulated acupressure devices help in overcoming the challenges of short or momentary term benefits [47].

Table 1: List of patented devices

Patented Devices	Description	Reference No
Acupressure glove	Gloves are fitted with nodules at the interior to provide therapy to hands.	68
Acupressure device for ear	This device aids in exertion of pressure for acupoints present in external ear	62
Acupressure Clips	Provides pressure at acupoint for headache	65
Apparatus of acupressure with foot control	Applies pressure to acupressure point on both hands	66
Point pressure therapeutic devices	It is made of spherical ball which is mounted and provides drag on a patient's skin rather than rolling.	67
Acupressure spinal device	It is a panel belt composed of central fabric and has opposed projections of elastic panels	59
Massaging footwear	A footwear with projections in the inner sole for aiding in message on the underside of foot	56
Acupressure pen	It is an opto-mechatronic pen for therapies without piercing skin.	57
Fingering acupressure apparatus	It is composed of lower and upper pressing plates with adjustable distance for providing relief to palm muscle.	54
Automatic modulated acupressure device	Helps in treatment of nausea and vomiting by modulating the pressure over the wrist.	47
Acupressure detachable device	Wristband having projections for application of pressure in joint region	62
Apparatus of acupressure for injuries related to soft tissue	This apparatus is composed of a plethora of pins, treats soft tissues as well as provides relaxation to body parts.	64

## VII. LIMITATIONS

Considering it to be self-healing approach, acupressure is being performed independently by most patients. Accurate selection and diagnosis of suitable acupoint is one of the

major necessary task in acupressure. It is necessary to take authentic counseling and advises from therapists as well as professional acupuncturist while considering crucial conditions entailing kidney, heart, other contagious diseases as well as lungs. It is essential to get related education and gain considerable knowledge in this domain with advanced modalities through programs that are accredited to professionals [48]. Acupressure have to be circumvented after consuming alcohols, after heavy meals or taking narcotics. It should not be performed on inflamed, rash, scarred or injured skin [20]. Though acupressure is easily accessible and non-invasive technique, still it is necessary to take special and measured precautions while applying on a pregnant woman. In comparison to acupressure, ice massage fetched more purposeful relief to pain in the active phase pertaining to labour [49]. Acupressure wristbands did not turn up to be effective in acting as an effective measure for getting relieved from labour phase and other post-delivery problems [50]. Thus, the choice followed by stimulation of distinct acupoints and their pressure to stimulate definite acupoints is of major consequence. Pressure Intensity is required to be controlled in an effective way along with other parameters to ensure effective healing of pain. Contemporaneous stimulation of a couple of acupoints or more than that (LP/DP/TP) needs to have a proper assessment regarding the effects that it will produce in human body.

## VI. CONCLUSION

Since last few decades, CAM has captivated the health workers and practitioners across the globe. Not only the health practitioners are fascinated but also the patients were transfixed with a greater ease on the account of its economic benefits, application ease, effectiveness and other prospects that being enthralled. CAM therapy is undoubtedly the real and existent culture of specified and determined methods of medications across the globe. Acupressure is hence a non-pharmacological and non-invasive intervention which has multidimensional benefits and roles that exist. Current examinations validate the claims traditionally and substantiate the use and manipulation of acupressure for healing innumerable diseases from pains thus ensuring a painless treatment. Present investigation surveyed on how the painless therapy can be endured successfully followed by the methodology of actions of acupoints and appraised some patented devices which are available for the therapy of various chronic and acute ailments. The intensities of pressure can be tuned in the modern devices. Furthermore, the use of drugs and dosage of other medications can be avoided to ensure no adverse side effects. To extend more and more therapies of CAM, more focus and interests should be given centred on regularity and adequation of acupressure to vitalize its enactment in hospitals.

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Dr. Sabyasachi Sen received bachelor (B.Sc. (Honors in Physics)), Masters (Physics with Electronics specialization), PhD (Sc) from the prestigious University of Calcutta and post doctoral work with Dr. Swapan Chakrabarti, Dept. of Chemistry, University of Calcutta. My teaching experience is nearly 20 years and experience in academic administration as Head for more than 17 years and Dean about nearly 6 years. My area of research interest is molecular nanoelectronics and spintronics having 36 published research papers in journal of international repute which includes, Physical Chemistry Letters (2018, 9 (11), pp 3105–3109 Impact factor: 8.709), Physical Review Letters (Phys. Rev. Lett. 109, 257204 (2012); Impact factor: 7.5), Journal of American Chemical Society (J. Am. Chem. Soc. 132 (2010)15334; Impact factor: 11, Research Highlight in Nature India, entitled 'Electron spin memory'), Journal of Physical Chemistry C (Impact factor: 4.8), Physical Review B (Impact factor: 3.69), ChemPhysChem (Impact factor: 3.349), Physical Chem. Chem. Physics (Impact factor: 4.493), Journal of Physics & Chemistry of Solids (Impact factor: 3.442) and many more. I have book chapter in Hand of Book of Nanophysics edited by Prof. K. D. Satler and published by CRC press. I have also been one of the editors of Springer Lectures and Network Series published in 2017. I have already completed one DST-FAST track project (2016) of Rs. 4.2 lakhs, one UGC (Minor) project (2017) of Rs. 4.7 lakhs and CSIR project (2017) of 14.64 lakhs. In 2017, I have received AICTE (RPS) project of amount 17.68 lakhs. In 2018, one FIST project worth Rs. 60 lakhs has been sanctioned by DST in 2018 with me being Principal investigator. In 2008, I received Sir AcharyaPrafulla Chandra Roy Award, 2007-08 from University of Calcutta for contribution in research activities. With time I have been involved in various academic and administrative positions of the Institute, starting of heading the department of Physics, secretary of the Academic Council (after College became autonomous in 2012), nodal officer training and research under TEQIP 1.2, members of disciplinary committee and various other administrative responsibilities as was entrusted over years. In 2015, I was awarded as 'Best HoD of JIS College of Engineering' in JIS SAMMAN. In 2020, I was awarded as 'Best Teacher of JIS College of Engineering', 'Teacher with Best Video lecture', 'Teacher with highest number of publications'. In 2006, I was made the then Assistant Professor and in July, 2016 I have been upgraded to the rank of Associate Professor. In January 2016, I have been given additional responsibility of Dean-Research & Development of the Institute and in 2017 I was also given additional responsibility of Controller of Examination (Actg from July 2017 to July 2019) and serving the Institute in all these peripheries.