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Review Article

Alternative to drug delivery system: Chromotherapy

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ABSTRACT

Chromotherapy, also called Color Therapy, Colorology or Light Therapy, is an alternative medicine method for healing. Color is use to balance energy wherever our bodies are lacking, be it physical, emotional, spiritual, or mental. The history of color therapy is very ancient. The use of color as a therapy is a truly holistic, non-invasive and powerful therapy which dates back thousands of years; evidence of this can be found in ancient texts from India, China and Egypt. Color therapy has also been used for healing by the ancient Greeks and Romans. In the present study, a brief review of the alternatives to drug delivery system has been discussed.

Keywords: Chromotherapy, Alternative medicine, Color therapy, Healing.

INTRODUCTION

Drugs are rarely administered as pure chemical substances alone and are almost given as formulated preparation or medicines. These can vary from relatively simple solutions to complex drug delivery systems¹. The commonly employed drug delivery systems include tablets, capsules, pills, injections and some extent topical and mucosal formulations. For most of the drugs, conventional methods of drug administration are effective, but some drugs are unstable or toxic and have narrow therapeutic ranges². Oral delivery is by far the easiest and most convenient way of delivering drugs especially when repeated or routine administration is required³. While this has the notable advantage of easy administration, it also has significant drawbacks namely poor bioavailability due to hepatic metabolism (first pass) and the tendency to produce rapid blood level spikes (both high and low), leading to a need for high and/or frequent dosing, which can be both cost prohibitive and inconvenient⁴. Allopathic drugs have some side effects. An alternate to drug delivery system, color can be used for the treatment of various diseases. Painting rooms and using coloured ointments formed a part of this process⁵. The mystical temples of the Pharaohs in Ancient Egypt are thought to be the originations of the alternative medicine color therapy⁶.

At the temple of Heliopolis in ancient Egypt, patients were treated in rooms specifically designed to break up the sun's rays into the colors of the spectrum⁷. Egyptians built healing temples of light four thousand years ago, bathing patients in specific colors of light to produce different effects as required⁸.

Physician Aulus Cornelius Celsus wrote about using colour as a therapy as early as the 1st century in Rome. In the 9th century, the Arab physician Avicenna wrote about the relationship of colour to both diseases and their treatments. Colour therapy has been successfully used in hospitals and mental institutions since the 1930s⁵. Probably the most extensive and detailed work on colored therapy, was done by Dr. Dinshah P. Ghadiali (1873-1966), a naturalized American from India. The doctor spent many years researching the effects of color on disease and developing colored filters. In 1920, he introduced a system of colored lights, which he sold under the name "Spectro-Chrome" lamps. Touted as a treatment for such diseases as diabetes, tuberculosis, and chronic gonorrhoea, the healing lamps were considered preposterous⁷.

In 1947, Swiss psychologist Dr. Max Lüscher introduced the Lüscher Color Test, a form of color therapy still widely used by many psychologists. The test consists of choosing 43 colors from a total of 73 possibilities, although there are simpler variations. By observing the colors a person chooses or rejects, the therapist can learn a good deal about a subject's psychological state. For example, if a person selects darker colors, it suggests a need for rest and stress reduction⁷.

At about the same time, Russian researcher S.V. Krakov was conducting a series of experiments in which he separated the differ-

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ent wavelengths in the light spectrum to show how color can affect the nervous system. He observed that red light stimulated the adrenal glands, raising blood pressure and pulse rate, and that blue and white light had a calming effect. Although there are still no rigorous studies supporting Krakov's work, many practitioners today commonly recommend color therapy for stress and for stress-related pain.

More unusual color therapies also continue to be utilized. Over the past decade Aura-Soma (an Eastern-influenced therapy that uses colored bottles of essential oils and extracts to shed light on a person's "true inner self") has gained a following. And Esoteric Colorpuncture Therapy (ECT), which focuses colored light on acupuncture points, is being studied as a treatment for a variety of health problems, including migraines, bronchitis, and uterine fibroids⁷.

Color is simply a form of visible light, of electromagnetic energy. It is the visible reflection of the particles in the atmosphere. Color makes up a band of these light wave frequencies from red at 1/33,000th's of an inch wavelength to violet at 1/67,000 of an inch wavelength⁸.

This light energy affects all living cells. Used in the right way, these different frequencies of light, i.e. colour, can have a profound and healing effect on all human. As we absorb color energy not only through the eyes but also through the skin⁹.

Chromotherapy works by matching the frequency wavelength of a color to that of a disease, virus or infection. With the correct and characteristic frequency, all bacteria, parasites, fungi and diseased tissues are destroyed¹¹. Depending what color we choose for healing, the invisible vibration of color can relax or stimulate us¹².

Different colours are associated and resonate with different parts of the body. These are known as the seven energy centres of the physical being known as chakras. The chakras themselves are interconnected through energy meridians throughout the body. If those energy centres or meridians are out of balance the body often reacts with physical symptoms resulting in a person feeling ill⁵. Color therapy using single or mixed colors may be shined on the whole body or on particular chakras¹³.

Photoreceptors in the retina, called cones, translate this energy into colors. The retina contains three kinds of cones: one for blue, one for green, and one for red. We perceive other colors by combining these colors. When the energy of color enters our bodies, it stimulates the pituitary and pineal glands. This in turn affects the production of certain hormones, which in turn affect a variety of physiological processes^{14,15,16}. This concept of colors affecting your body is part of the ancient Chinese technique Feng Shui. In 1942, the Russian scientists have demonstrated that red light stimulates the sympathetic nervous system, while white and blue light stimulate the parasympathetic nervous system. Other experiments revealed that certain colors stimulate hormone production, while other colors inhibit it¹². When we lack light, depression, insomnia, alcoholism and suicidal tendencies increase.

Exposure to light can affect moods, hormones and fertility¹⁰.

Advertising executives are well aware that a product can have a completely different impact if the color of the packaging is changed. Psychologists have found that certain colors in our immediate environment can help us perform some tasks. For example, exercise is best performed in an environment of warm colors, such as reds and oranges, whereas the tranquil blues and greens are ideal for mental concentration¹⁷.

Specific colors can also have an effect on specific diseases. Symptoms of acute eruptive diseases such as smallpox and measles were relieved when patients were put in a room with red windows. Melancholiacs also recovered after a few hours in such rooms¹⁴. Pain and depression was found to respond well to therapy using flashing bright lights and colored lights. Photostimulation with flashing opaque white or violet lights was found to induce relaxation, reducing stress and chronic pain. Use of photostimulation, or brain wave synchronization, to assist relaxation and the induction of hypnosis had been around since 1948¹⁴.

Evidence shows that disease is caused by an imbalance in the autonomic nervous system. The autonomic system has two parts the sympathetic and the parasympathetic. The sympathetic is responsible for survival or "fight or flight" and the parasympathetic is responsible for the body sustaining life, like digestion and healing diseases while running away from a grizzly bear the body does not care about digesting the food. Stress certainly contributes to disease and it can also be the fuel that sustains disease and prevents healing. The mechanism of stress is felt to over-stimulate the sympathetic nervous system and to suppress the parasympathetic. When the parasympathetic system is suppressed the body has a difficult time to heal disease. Healing will not take place unless there is a balance in the autonomic system. Color therapy can be helpful in such cases. The red spectrum has been documented to stimulate the sympathetic system. The red color has been associated with anger and increase heart rate and an increase in blood pressure. Blue on the other hand will relax the sympathetic system and stimulate the parasympathetic which is the first step towards healing disease¹⁸.

POTENTIAL DANGERS

Color therapy appears to be well tolerated in most individuals, although safety has not been thoroughly tested in scientific studies. Exposure to bright light can cause eye injury. Strobe lights may cause seizures in susceptible individuals.

DIFFERENT TECHNIQUES^{5, 9, 19, 20}

Color Therapy can be used on the body in a number of different ways. As with any therapy, each therapist may have his or her own style, however, a number of common methods used are:

- ◆ Color Healing Using Lamp Radiation

- ◆ Color Breathing
- ◆ Color Water Healing - Sun's Energies
- ◆ Radiant Color Magnetism
- ◆ Color Healing - Clothing
- ◆ Colored eye lenses
- ◆ Color Visualization
- ◆ Solarized water
- ◆ Color Healing Using Candles

Color can be used in healing to bring balance and harmony within the psyche and the body¹². For diabetes, radiation of green color for thirty minutes followed by yellow for fifteen minutes all over the body twice daily²¹. For anxiety, radiation of blue for thirty minutes followed by indigo for fifteen minutes and green for ten minutes twice per day until condition improves²⁴, while radiation of orange, green and yellow color for fifteen minutes each to strengthen the natural immune system have been recommended²¹.

In *Atharva Veda*, one of the ancient Indian scripture, under *Surya Kiran Chikitsa* (meaning healing with the sun rays), it has been described how the unique vibration of different colors could help in healing different ailments²³.

Proper use of color helps to heal different body ailments, for instance, red is used to treat liver disorders, blue affects the pineal gland and green helps treat pituitary problems¹⁵.

Colors also trigger varying responses from different cultures. Christian brides, for instance, wear white on their wedding day, signifying purity. In Japan, a bride wears white to signify 'death' to her family. The same white becomes a color of mourning in India. For weddings, Indian brides prefer the passionate red—symbolizing the awakening of their sexuality. Gold symbolizes opulence and divinity. Purple, on the other hand, signifies high order—so much so that at one time purple clothing was only worn by priests and kings. In Greece, thousands of murex shells used to be crushed in order to get a small quantity of this dye.

Nicholas Humphrey, a British zoologist, links the visual concept of colors to the evolution of colors in nature. According to him, we respond to bright colors, for instance red, with the emotional part of our brain. First, our muscles get tense, then we lean towards the color. Our respiration and heart rate goes up and the blood pressure starts rising. The opposite reactions occur when we see light colors such as blue. Our muscles relax, the heart and respiration rate drops and the blood pressure lowers¹⁵.

DESCRIPTIONS OF COLORS

RED

Red makes you feel more energetic, outgoing and ready to move in some overt way. Red helps to motivate fire and passion, ferocity and strength. Red denotes a strong sexuality¹⁵. It can help overcome negative thoughts. However, it is also associated with an-

ger; if we have too much red in our system, or around us, we may feel irritable, impatient, and uncomfortable²⁶. Red increases circulation and energy and reduces nervousness. Red is used to treat constipation and malaise²³. It is used for burning out cancer, drying up weeping sores or wounds¹⁹. This colour helps to loosen stiffness and restraints. It stimulates the release of adrenalin in the bloodstream and increases haemoglobin. Hence, it results in greater strength and energy and is good for treating anaemia and other blood-related conditions. Red can also make you feel warmer, reducing pain that comes from the cold. It also helps for people who are feeling lethargic or depressed²⁶. It increases the heart rate, respiration and blood pressure. It stimulates and warms the body. It is useful for anemic patients and patients with hypotension¹⁶.

ORANGE

Orange is the color of success. It helps to expand interests and activities¹⁵. It is used to increase immunity, sexual potency, and helps in all digestive ailments, chest and kidney diseases. Orange will have a gentle warming effect if used lightly. It is not a good color for nervous people or people easily agitated¹⁹. It is useful in treating gallstones, digestive ailments, chest and kidney diseases and arthritis²⁴. It increases the appetite and decreases tiredness¹⁶.

YELLOW

Yellow encourages open mindedness and attention to detail. It generates positive and optimistic qualities in those who wear it¹⁵. The colour of the sun, yellow suggests a positive outlook towards life and a happy and content person²⁵. It has an energizing effect just as sunshine. Anything written on yellow paper is easier to remember¹⁶. Yellow cleanses the bloodstream and the liver while stimulating the nerves. It is good for the anxiety and depression that may accompany chronic headaches²³. It is used for mental stimulation; it will help you think quicker. It helps in curing dermatitis and other skin problems and also found to be useful in facilitating the digestive process. But it must be used carefully because it is very stimulating and overstimulation could result in exhaustion and depression^{19,24}.

GREEN

Green color creates calm, soothing and balancing atmospheres, tends to create harmony and equilibrium^{15, 24}. Green is considered a master-healer, good for all conditions, and is also a soothing and cooling color that can help to stabilize the emotions and rebuild the tissues²³. It will balance the emotions and brings about a feeling of calmness. It is a good general healing color because it stimulates growth therefore it is good for helping heal broken bones - regrowth of tissue of all kinds¹⁹. Green helps to calm frazzled nerves and is good for people with heart conditions. It stimulates growth and therefore helps to heal broken bones and facilitates the regrowth of tissue. It is recommended for pregnant women to create a serene atmosphere. However, too much green can bring on a sense of lethargy as the person settles into a state of tranquility almost approaching stagnation²⁶. It also has a soothing and relaxing effect on the body as well as

the mind. It alleviates the mood in depressed and ill patients¹⁶. Green has a strong affinity with nature, helping us connect with empathy to others and the natural world. We instinctively seek it out when under stress or experiencing emotional trauma. It creates a feeling of comfort, laziness and relaxation, calmness, and space, lessening stress, balancing and soothing the emotions. Dark green represents the onset of death and is non-descript, unassertive, a negation of love and joy. Lime green and olive green can have a detrimental effect on both physical and emotional health since sickly yellow and green are associated with the emotions of envy, resentment, and possessiveness²⁸. Green is associated with spiritual balance and growth²⁷.

BLUE

Blue suggests spirituality and order. Those who wear it reflect a wish for peace and quiet, tranquility and even solitude¹⁵. Blue may be used on the head or directed to the abdomen to treat the liver, which is believed to play a role in some headaches. Blue cools and soothes²³. Blue is the color of electricity and is the color of truth, serenity and harmony, by helping to soothe the mind. Blue is good for cooling, calming, reconstructing and protecting. Blue will be helpful in feverish conditions, and to stop bleeding in nervous irritations. It is very good for burns. Too much blue could leave you cold, depressed and sorrowful²¹. It lowers the blood pressure, heart rate and respiration. It also has a cooling effect and is an appetite suppressant^{16, 28}.

INDIGO

Indigo has the highest positive vibration. It combines reason with intuition and discipline with creativity¹⁵. The colour indigo is associated with the mysterious and the profound. People attracted to this colour usually look beyond the surface of things. They are drawn to higher things, sometimes even the occult. Indigo stimulates the intellect. It gives a person a sense of courage, authority and inner calmness. At the physical level, indigo purifies the blood. It is useful in treating diseases of the ear, nose and eyes and for sinus problems. It is also used for curing varicose veins, diseases of the nervous system, boils and ulcers, and skin disorders. An excess of indigo can cause a headache and feel sleepy²⁴. The indigo ray allows us to see the true self and is associated with the pituitary gland, which is the master gland of the body in color therapy²⁸.

VIOLET

(Brow/Third Eye Chakra) - Wearing violet generates the feeling of self respect and dignity. It has creative and spiritual qualities¹⁵. Violet is a very powerful colour and has strong links with creativity. It is said that Leonardo da Vinci meditated upon it and that Beethoven had violet curtains. Those drawn to this colour are often shy. It is useful in treating people who are excessively emotionally agitated. It also helps compulsive eaters to calm down and control their compulsion to eat. The creative energy unleashed by this colour is often too much to handle and if not channelized properly can make a person feel quite ill. It is not advisable for clinically depressed individuals²⁴.

It suppresses the appetite. It is also useful for migraine headaches¹⁶.

SILVER

Silver is the color of peace and persistence. It is the major purging color so it is very good for removing unwanted diseases and troubles from the body. It is best for cancer of tissue and blood¹⁹. Silver reminds us of all we have learned in our life and perhaps, in many lifetimes, Silver says we have gained great wisdom. We have learned to stay bright even in the most difficult circumstances. Silver tempers us by our own experiences what is left is shining silver. What were once lessons in the midst of transformation (represented by black) now shines brightly through silver. Like a silver ray of moonlight on a dark night, we bring light into the midst of negativity, grief, suffering and hopelessness through silver. The lesson of silver comes to those who have not embraced the learning that has presented itself in life. This tarnishes the silver. Its beauty is hidden and the darkness still remains. It is time to allow the light to shine through the darkness, to let the beauty of silver shine through²⁹.

GOLD

Gold represents of alchemy of consciousness. It is the strongest color to help cure all illness. It is so strong that many people are not able to tolerate it, so people have to be conditioned to gold over a period of time. Gold strengthens all fields of the body and spirit¹⁹.

PURPLE

Purple is also a color that will connect you with your spiritual self. It is good for mental and nervous problems. It will assist very well with rheumatism and epilepsy. Helps with pain, is used in deep tissue work and helps heal the bones. Too much purple and you don't tend to live in this world²¹. Purple is considered to bring spiritual intuition²⁷.

LAVENDER

Lavender is the color of equilibrium, it helps with spiritual healing. The violet flame is supposedly charged with the light of divine freedom. It is used to burn off karma from other lifetimes on all levels¹⁹.

WHITE

White includes the entire colors spectrum. It represents the source of conscious creation. It will purify the body on the highest levels. It is the highest charging field to bring peace and comfort at the highest level²¹. White is associated with high spiritual purity²⁷.

PEACH

The peach frequency is used for peace, truth, and balance¹⁹.

MAGENTA

(Crown/Pineal Chakra) - Magenta generates feelings of softness, gentleness and kindness. It creates feelings of love and compassion¹⁵.

BROWN

You're more insecure than most people you know. And this is likely to manifest itself in a chronic desire for a settled lifestyle. The good news is that you are probably in terrific health²⁵. Brown is of the earth. It is made up of yellow, orange, and green: yellow for the warmth of the sun, orange for the depth of emotion and aliveness through the senses, and green for growth and healing. Brown reminds us of the strength we have and brings us a deep sense of connectedness with the earth and our life here on earth. The color brown tells us that it is time to become firmly planted in reality. Brown represents stability, honesty and straightforwardness. Brown by itself can be overburdened much like Earth is. If we continue to take on all the emotions and pain that others are experiencing, or if we try to nurture and heal everyone around, then we will find that we have nothing left for ourselves. The lesson in Brown is to balance Earth and Heaven, human and divine. Then all things are possible²⁹.

BLACK

Choice of black means despondency and a deep-seated dislike of one's current lifestyle. Also a dogged determination to change all that and make things better. People who wear black often are unconsciously putting defensive barriers against the world to hide behind²⁵. It increases self confidence. However, it also decreases the appetite¹⁶.

GREY

This is eternal escapist's favorite. Grey is for a person who seeks to avoid emotional conflicts and commitment. However grey-lovers are usually reliable people in crises²⁵.

PINK

Pink combines the vitality of red with the purity of white. Since pink is so light in color, the purity and floating nature of pink predominates. Through pink the pain of betrayal turns into a deep understanding of how to take care of ourselves without closing off from others. Hurt feelings are healed leaving a deep understanding to those who are wounded. Pink teaches us that life is a playground and there is so much to enjoy. In a pink world everything is perfect, no

worries, no cares, nor any dangers, everything is available for our enjoyment. Through pink what others consider unreal seems perfectly natural to us. Pink allows us to feel free to trust others completely, to give without restrictions and to love with compassion. The lesson in pink is its vulnerability without protection. We must never lose that childlike joy and innocence pink gives us, however we must allow the capable part of the self to protect us and help us live in a world that does not always respect innocence²⁹. It relaxes the muscles and acts as a tranquilizer^{16, 25}. Pink is emotionally soothing and calming, and gives a feeling of gentle warmth and nurturing. It lessens feelings of irritation and aggression, surrounding us with a sense of love and protection. It also alleviates loneliness, despondency, oversensitivity, and vulnerability. While red relates to sexuality, pink is associated with unselfish love²⁶.

REFERENCES

1. Aulton ME., *Pharmaceutics: The Science of Dosage Form Design*, 2nd Edition, Churchill Livingstone. 2002, 1-5.
2. Lesson 24: Concepts of Delivery System, www.rocw.raifoundation.org/biotechnology/MScBioinformatics/drugdelivery/lecture-notes/lecture24.pdf.
3. Chen H, Langer R. Oral particulate delivery: status and future trends, *Adv Drug Deliv Rev.* 1998, 34, 339-350.
4. Chien Y. W. *Transdermal controlled systemic medications*. Marcel Dekker, Inc. USA. 1987, 1-21.
5. <http://stason.org/articles/wellbeing/health/index.html> <http://www.essortment.com/in/Health.Alternative/index.htm>
6. <http://stason.org/TULARC/health/colortherapy/index.html>
7. <http://www.thedreaminggoddess.com/colortherapy.php>
8. http://www.colourtherapyhealing.com/colour_therapy/
9. <http://www.brigitemars.com/index.htm>
10. <http://colour-therapy.co.nz/index.html>
11. <http://reiki-for-holistic-health.com/>
12. <http://www.intelihealth.com/Colortherapy/>
13. <http://www.dhyansanjivani.org/colortherapy.asp>
14. <http://www.momentum98.com/colorther.html>
15. http://www.pediatriconcall.com/forpatients/alternativemedicines/color_therapy.asp
16. <http://www.ofspirit.com/elizabethharper1.htm>
17. <http://www.healingtheeye.com/color.html>
18. <http://www.crystalinks.com/subtlebodies.html>
19. <http://www.about.com/>
20. http://www.holistic-online.com/Color/color_home.htm
21. http://www.holistic-online.com/Color/color_home.htm
22. <http://www.lifepositive.com/colorconscious.htm>
23. <http://www.indiaparenting.com/colortherapy.html>
24. <http://www.indiadiets.com/colortherapy/index.htm>
25. <http://www.geocities.com/COLOURTHERAPY.html>
26. <http://www.21stcenturyamsterdam.com/>
27. <http://www.colormatters.com/body.html>
28. <http://www.colorvibration.com/>

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