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INTRODUCTION TO ANTIOXIDANTS

Antioxidants are our first line of defense against free radical damage, and are critical for maintaining optimum health and wellbeing. Because so many factors can contribute to oxidative stress, individual assessment of susceptibility becomes important. (*Int J Bio-med Sci. 2008 Jun; 4(2): 89-96*)

Observational studies have indicated that fruit and vegetables, and dietary antioxidants may play an important role in reducing the risk of chronic diseases, potentially by affecting pathogenic mechanisms such as oxidative stress and inflammation. The results of the studies did not support the hypothesis rather showed marked increase in plasma antioxidant concentrations. Continued investigations are needed to characterize the individuals who potentially might benefit from antioxidant supplementation.

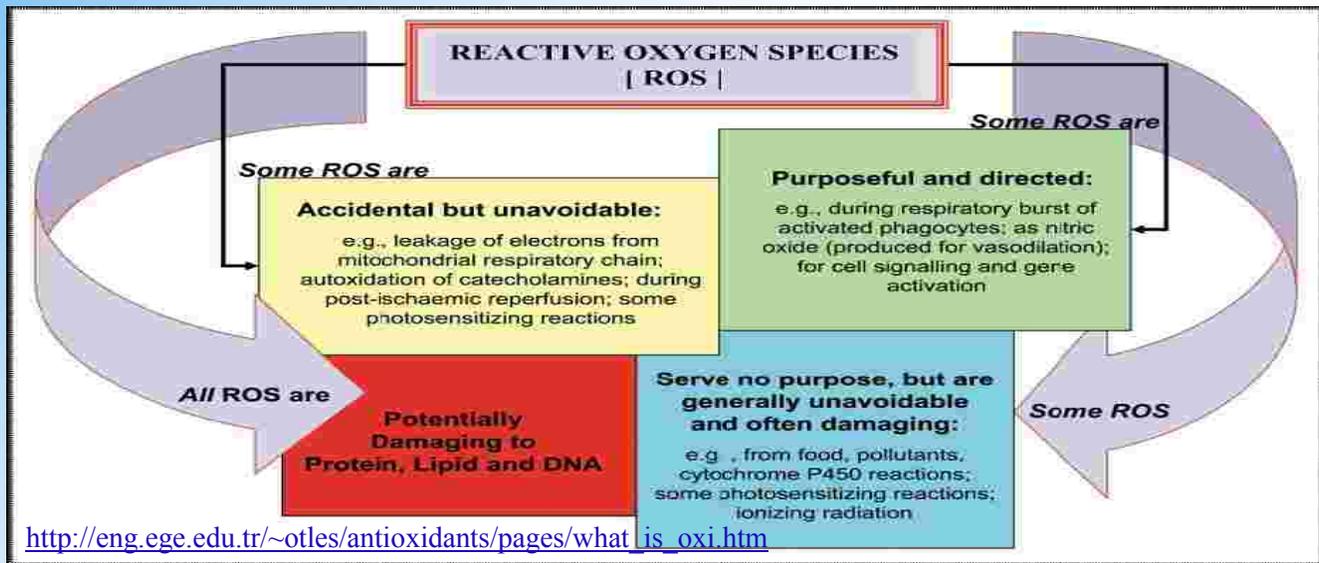
While the double-edged effects of ROS are well known, with toxic and deleterious effects at high concentrations, the biphasic effects of antioxidants have been postulated recently. Interaction of antioxidants with ROS present at physiological concentrations required for optimal cell functioning could disrupt the balance between oxidant production and antioxidant protection.

The physiological role of antioxidants is to prevent damage to cellular components arising as a consequence of chemical reactions involving free radicals. Overall, free radicals have been implicated in the pathogenesis of at least 50 diseases.

(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1731363/>)

REACTIVE OXYGEN SPECIES (ROS)

The reactive oxygen species are the contributors of oxidative stress which lead to various diseases and disorders such as cardiovascular disease, cancer, aging, and various neurodegenerative diseases. Things like vigorous exercise, chronic inflammation, infections, and other illnesses; exposure to allergens and the presence of “leaky gut” syndrome; and exposure to drugs or toxins such as cigarette smoke, pollution, pesticides, and insecticides may all contribute to an increase in the body’s oxidant load.



OXIDATIVE STRESS AND HUMAN DISEASE

Oxidative damage to DNA, proteins, and other macromolecules has been implicated in the pathogenesis of a wide variety of diseases:

CARDIOVASCULAR DISEASES

A growing body of evidence suggests a critical step in its development is the oxidation of low-density lipoprotein (LDL) within the arterial wall. It has been estimated that dietary increases in antioxidant vitamins may reduce the risk of heart disease by 20-30%. Phytochemicals from fruits (polyphenols: anthocyanins, ellagitannins, catechins, tannins), vegetables (flavonoids: quercetin, lycopene), spices (piperine, safranal) and other sources (polyphenols: catechins, epicatechin, 3-gallate, epic-gallocatechin) have been shown to have cardio protective effects and to reduce CVD factors (*Ref. Gracia KC et al; J Clin Med. 2017 ; 6(2): 22; Yaribeygi H, J Cell Physiol. 2018*).

- **CORONARY ARTERY DISEASE**

Shih-Hung Chan et. al. (2017; Redox Biology) established that SIRT1 (Sirtuin 1) protein plays important role in regulating cellular physiological processes and showed through preclinical studies that oxidative stress in monocytes with CAD is significantly up-regulated by SIRT1 inhibition.

In addition, pro-apoptotic events, pro-inflammatory events and mitochondrial impairment are significantly up-regulated in CAD patients, whereas activation of SIRT1 function reversed those atherosclerotic events. (<https://doi.org/10.1016/j.redox.2017.05.027>)

NEUROLOGICAL DISORDERS

Neural tissue may be particularly susceptible to oxidative damage because it receives a disproportionately large percentage of oxygen and it has a high concentration of polyunsaturated fatty acids which are highly prone to fatty acids. (*Arch Biochem Biophys.* 2015 Jun 15; 576: 8–16)

- **EPILEPSY**

Alberto Pauletti et. al. (2017; *Brain A Journal of Neurology*) demonstrated the effect of oxidative targeted therapy in epileptic rat model. He showed significant improvement in disease outcome with clinically used drugs for a limited time window starting early after injury significantly improves long-term disease outcomes. (<https://academic.oup.com/brain/article/140/7/1885/3857728>). In contrary, clinical trial by *Bindu Menon et. al.* (2012; *Seizure*) claimed no physiological effect of AED's on oxidative stress level. (<https://www.sciencedirect.com/science/article/pii/S1059131112002361>)

CANCER RISKS

Oxidative stress, chronic inflammation, and cancer are closely linked (*Bahar G et al. Cancer.* 2007;109:54–59) Epidemiological evidence consistently relates low antioxidant intake or low blood levels of antioxidants with increased cancer risk. It is believed that antioxidants exert their protective effect by decreasing oxidative damage to DNA and by decreasing abnormal increases in cell division.

A review by Simone Reuter (*Free Radic Biol Med.* 2010) on the role of ROS in different phases of tumor genesis mentioned that targeting redox-sensitive pathways and transcription factors offers great promise for cancer prevention and therapy. Numerous agents have been identified that can interfere with redox cell signaling pathways. These include Nutraceuticals derived from fruits, vegetables, spices, grains, and cereals. They have been shown to suppress tumor genesis in preclinical models.

ANTIOXIDANT PROTECTION

Humans have evolved a highly sophisticated and complex antioxidant protection system. It involves a variety of components, that function interactively and synergistically to neutralize free radicals. These components include:

- Nutrient-derived antioxidants
- Antioxidant enzymes,
- Metal binding proteins

DIETARY ANTIOXIDANTS

Vitamin C neutralizes ROS in the aqueous phase before lipid peroxidation is initiated. Vitamin E, Beta carotene and other carotenoids are also believed to provide antioxidant protection to lipid-rich tissues.

PHYTONUTRIENTS

Plant-derived substances, collectively termed “phytonutrients,” are becoming increasingly known for their antioxidant activity. Flavonoids have been demonstrated to have anti-inflammatory, antiallergenic, anti-viral, anti-aging, and anti-carcinogenic activity.

ENDOGENOUS ANTIOXIDANTS

The antioxidant enzymes – glutathione peroxidase, catalase, and superoxide dismutase (SOD) – metabolize oxidative toxic intermediates and require micronutrient cofactors such as selenium, iron, copper, zinc, and manganese for optimum catalytic activity.

Antioxidant Health

“The amount of antioxidants that you maintain in your body is directly proportional to how long you will live.”

Dr. Richard Cutler
Anti-Aging Research Department Director
National Institute of Health (NIH) Washington D.C.

The infographic features a dark background with a blurred image of a person's face. At the top, the text 'ENHANCED ANTIOXIDANT PROTECTION' is written in large, white, bold letters. Below this, on the left, is a blue circle containing a white molecular structure with a central atom and five surrounding atoms. Below the circle is the text 'ENDOGENOUS antioxidant'. A white arrow points from the circle to the right. On the right side, there is a cluster of approximately 100 small, orange, star-shaped icons representing free radicals. Below this cluster is the text '100+ free radicals'. At the bottom of the infographic, the text 'QUENCH MANY FREE RADICALS' is written in large, white, bold letters. At the very bottom, there is a white box containing the URL: <http://usananews.com.au/wp-content/uploads/2017/04/enhanced-antioxidant-protection.jpg>

"This is the first clinical trial to assess the impact of a mitochondrial-specific antioxidant on vascular function in humans," said lead author Matthew Rossman, a postdoctoral researcher in the department of integrative physiology .

Novel antioxidant makes old blood vessels seem young again

Date: April 19, 2018
Source: University of Colorado at Boulder
Summary: Older adults who take an antioxidant that specifically targets mitochondria see age-related changes in blood vessels reverse by the equivalent of 15 to 20 years within six weeks, a new study shows.

Older adults who take a novel antioxidant that specifically targets cellular powerhouses, or mitochondria, see age-related vascular changes reverse by the equivalent of 15 to 20 years within six weeks, according to new University of Colorado Boulder research.

The study, published this week in the American Heart Association journal *Hypertension*, adds to a growing body of evidence suggesting pharmaceutical-grade nutritional supplements, or Nutraceuticals, could play crucial role.

<https://www.sciencedaily.com/releases/2018/04/180419141523.htm>

World Diabetes Day 2017: The Connection Between Antioxidants and Diabetes

We know that obesity and inactivity are the major risk factors of type 2 diabetes, recent research results have indicated that oxidative stress may be one of the causes for insulin resistance and less insulin secretion which are well established causes for the onset of diabetes.

Antioxidants are usually heard of in relation to cardiac diseases, for skin health or weight management. We know that obesity and inactivity are the major risk factors of type 2 diabetes, recent research results have indicated that oxidative stress may be one of the causes for insulin resistance and less insulin secretion which are well established causes for the onset of diabetes.

<https://www.ndtv.com/food/world-diabetes-day-2017-the-connection-between-antioxidants-and-diabetes-1775220>

22 March 2018

Antioxidants and amino acids could play role in the treatment of psychosis

A scientific paper has revealed that some nutrients found in food may help reduce the symptoms of psychotic illness, when used in the early stages of treatment.

The systematic review, led by Dr.Firth, honorary Research Fellow at The University of Manchester and Research Fellow at NICM Health Research Institute, Western Sydney University examined if nutrient supplementation could provide effective 'add on' treatment for young people with psychosis. The review is published in 'Early Intervention in Psychiatry'.

<http://www.manchester.ac.uk/discover/news/antioxidants-and-amino-acids-could-play-role-in-the-treatment-of-psychosis/>

**ARE ANTIOXIDANTS
ALWAYS BENEFICIAL
TO HEALTH ???**

Antioxidants may not always be beneficial to health

By Zai-Qun Liu Ph. D

ABSTRACT

Some results from cohort investigations indicate that supplemental antioxidants cannot decrease the risks for some diseases and even can play an inverse role because the antioxidant may not be involved in metabolism or may be a pro-oxidant in vivo. Therefore, further studies are required to identify conditions of an antioxidant converting into a pro-oxidant and the pathway of an antioxidant being a metabolic component. Additionally, long-term investigations on large-scale cohorts are required in order to clarify which disease is suitable for antioxidant therapy and how antioxidant intake can really maintain health.

Why do we age?

Oxidation [1].

Why do we catch diseases?

Oxidation [2].

How can we stay healthy?

Intake of antioxidants.

<https://www.sciencedirect.com/science/article/pii/S0899900713002189>

Antioxidants May Make Cancer Worse

New animal studies explain why supposedly healthy supplements like beta-carotene could exacerbate a dread disease

By Melinda Wenner Moyer on October 7, 2015
Véalo en español

Antioxidants are supposed to keep your cells healthy. That is why millions of people gobble supplements like vitamin E and beta-carotene each year. Today, however, a new study adds to a growing body of research suggesting these supplements actually have a harmful effect in one serious disease: cancer.

The work, conducted in mice, shows that antioxidants can change cells in ways that fuel the spread of malignant melanoma—the most serious skin cancer—to different parts of the body. The progression makes the disease even more deadly.

<https://www.scientificamerican.com/article/antioxidants-may-make-cancer-worse/>

Antioxidants: Friend or foe?

Abstract:

Reactive oxygen species are the intermediates that are formed during the normal metabolic process which are effectively neutralized by the antioxidant system of the body. Any imbalance in this neutralization process causes oxidative stress which has been implicated as one of the cause in diseases such as Alzheimer's disease, cardiovascular disorders, cancer *etc.* Research has enabled the use of antioxidants as therapeutic agents in the treatment of various diseases. Literature also puts forth the negative effects of using antioxidants in the treatment of diseases. This review is a compilation of both the beneficial and detrimental effects of use of antioxidants in the treatment of diseases such as cancer, cardiovascular diseases, diabetes and oral diseases.

<https://www.sciencedirect.com/science/article/pii/S1995764517311999>

FROM THE VIEW POINT OF OUR FACULTY



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1. As an medical biochemist how you interpret the role of antioxidants on health, under stressed life?

Several studies demonstrated that oxidative stress play a critical role in development of aging and chronic & degenerative disorders such as arthritis, autoimmune disorders, cardiovascular and neurodegenerative diseases, inflammation and cancer. Nowadays people get oriented about healthy fit lifestyle but at the same time they also feel work related stress due to competition in day to day life. They understand that physical exercise workout should be a part of daily activity to reduce stress, stay healthy, feel calm and to extend aging process. Reactive Oxygen Species (ROS) and Reactive Nitrogen Species (RNS) are the terms used to describe free radicals and other non-radical reactive derivatives under oxidative stressed conditions. These species target proteins of our body and thus cause diseases.

Although reactive species are associated with harmful biological events, but they are essential in cellular development and optimal function. ROS are involved in the immune response of cells and drug detoxification, they are a requisite for vasodilation, optimal muscular contraction and initiation of apoptosis. Some studies suggested that ROS are generated during exercise and modulate the level of muscle contraction. Physical activity improves antioxidant defenses and lowers lipid peroxidation levels both in adult and in aged individuals. It has been also suggested that the extent to which reactive species are helpful or harmful depends on the exercise duration, intensity, fitness condition and nutritional status of the individual.

2. How antioxidants help patients for faster recovery from metabolic diseases? Also share your clinical experiences.

Nutritional antioxidants act in different mechanisms and compartments, but are mainly free radical scavengers: 1) they neutralize free radicals & decrease their harmful effects, 2) they repair lipid peroxidized membranes and thus repair damage, 3) they decrease reactive oxygen species generation, 4) via lipid metabolism, short-chain free fatty acids and cholesteryl esters neutralize reactive oxygen species. By performing scavenging action, these natural antioxidants help patients for faster recovery from metabolic diseases.

3. How clinical and para-clinical researchers can explore this theme (role of antioxidants) for their research projects?

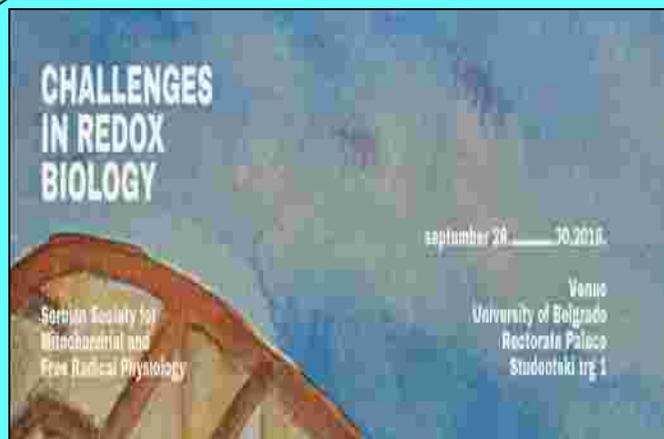
Clinical and para-clinical researchers can explore various oxidative stress related parameters like total oxidant status, total antioxidants status, oxidative stress index, levels of various enzymatic and non-enzymatic antioxidants in different oxidative stress associated diseases. This will help them to understand the pathophysiology behind oxidative stressed diseases and to suggest their treatment modalities.

Projects related to clinical intervention or observation have huge potential as diabetes, CVS issues, autoimmune disorders, neurological disorder, skin and allergy are somehow related to imbalance of ROS level. Faculty can explore and do tremendous research work in collaboration with non-clinical researchers from MS University, CSIR and ICMR labs, private university within Gujarat as well as national level. Exploring data and effect of Nutraceuticals as well as dietary supplement is now a days is very big area to explore.

UPCOMING EVENTS

(1) A CONFERENCE ON:
IRON, REACTIVE OXYGEN SPECIES &
FERROPTOSIS IN LIFE, DEATH & DIS-
EASE

SUZHOU, CHINA
NOVEMBER 26-30, 2018



(2) THE FOURTH INTERNATIONAL
CONGRESS OF SERBIAN SOCI-
ETY FOR MITOCHONDRIAL AND
FREE RADICAL PHYSIOLOGY

BELGRADE, SERBIAN
September 26-30, 2018

RESEARCH CELL RELATED UPDATE

1. Budget allocation for each institute for the academic year of 2018-19

Research Budget has been allocated to each institute for the year of 2018-19 and the information of the same has been circulated to each institute. We are expecting evidence/ hypothesis based high-end research proposals from the faculty for utilization of the research budget.

2. Collaboration with Institutes/Government Agencies at State level

The collaborations for the academic year 2017-18 are as follows:

S. No.	Name of the Institute/ Department	Name of the collaborating body	Objective/ Purpose of Collaboration
1	Department of Pharmacy	Saakshar skill academy, Vadodara, Gujarat	To fulfill current and future needs of industry by empowering youth technically
2	Department of Pharmacy	Karnataka College of Pharmacy, Bangalore	To have exposure for pharm D students with other college in terms of their working pattern in hospitals as well as some
3	Department of Pharmacy	Dr. B C Roy college of Pharmacy & Allied health sciences, Durgapur, West Bengal	To have research oriented exposure between two pharmacy institutes
4	Department of Pharmacy	Lachoo Memorial College of Science & Technology, Jodhpur, Rajasthan	Facilitating collaborative research in healthcare and pharmaceutical sciences
5	College of Physiotherapy	Rehabs, Vadodara	For Research and Education
6	SBKS MI & RC	District Health Society, Vadodara	For new born care (Bal Sakha Yojana)
7	SBKS MI & RC	Chief District Health Officer, District Health Society, Chhota - Udaypur	Providing specialist OPD Services at Different CHC on Fixed day.
8	SBKS MI & RC	Dept of Health & Family Welfare, Govt. of Gujarat	Coverage Evaluation Survey of Immunization coverage for Dahod district.
9	SBKS MI & RC	Dept of Health & Family Welfare, Govt. of Gujarat	Coverage Evaluation Survey of School Health Program for Chhota Udaipur District

Achievers of University Research Awards for the academic year 2017-18

Sr. No.	Name & Designation	Department & Institute
1	Dr. Chaturbhuj Rathore, Professor	Department of Neurology, SBKSMI&RC, SV
2	Dr. Anshula Deshpande Professor	Paedodontics & Preventive Dentistry, KMSDCH, SV
3	Dr. Ghanshyam Parmar Assistant Professor	Department of Pharmacy, SV
4	Dr. Medha Wadhwa Assistant Professor	Department of Management, SV
5	Nirmal Raj E V Assistant Professor	Sumandeep Nursing College, SV
6	Dr. Niketa Patel Assistant Professor	Department of Physiotherapy, SV
7	Hinsu Denishkumar Navinchandra, PG Student	Department of Pharmacy, SV
8	Devanshi Jain, PG Student	Department of Management, SV
9	Ekta Patel, PG Student	Sumandeep Nursing College, SV

Apart from above Research Awards, one special Award has been conferred upon **Dr. Chaturbhuj Rathore**, Professor, Dept. of Neurology, SBKSMI&RC, SV, for publishing research article in high impact factor journal (Clinical Neurophysiology; **Thomson Reuters IF- 3.614**). (i.e. Highest among all publications for the year 2017-18).

Seminar on 'Insight on Design Registry'

IPR cell has conducted one day seminar on 23rd June 2018 with the theme of '*Insight of Design Registry*' in order to sensitize our researchers and faculty towards importance of very crucial IP generation of their invention. Mr. Bhavik Patel, Patent Attorney, SVDU and Dr Anshula Deshpandey, Professor, KMSDCH, took lectures of the session. Nearly 100 participants attended the seminar. Seminar was followed with tea session and ended with thanks to all contributors, supporters and participants.

Through the seminar, faculty learnt the critical aspects of IP protection through registering their design and take them further for it utility in translational application.



Research Interaction with Gujarat Biotech Research Centre (GBRC), Govt. of Gujarat

With the objective of developing research infrastructure and high end research, Research Cell arranged a meeting with Dr. Jayashankar Das, Joint Director, & his team from Gujarat Biotech Research Centre (GBRC) Gandhinagar, Govt. of Gujarat and on 26th July 2018 at 10:30 am in the Chanakya hall, University Building, SV. Dr. Maneesh Jaiswal, Chief Research Officer, SV and Dr. Jayashankar Das, Joint Director, GBRC, presented their research of respective institutes.



Dr. Maneesh Jaiswal, showcase various research promotional programs of SV, ongoing research projects, faculty research plans specially in Oral cancer, Breast cancer, Neurology and Cell-Molecular biology & drug delivery. Dr. Jayashankar Das presented various research programs carried out at GBRC. He also elaborated his project on oral cancer and collaborative role of clinicians and Cell-biology expertise of SV in that project.

Research team visited to molecular biology lab, Dept. of Pharmacy, as well as Dept. of Oral medicine, KMSDCH, to see existing facilities and data related to oral cancer and other related clinical manifestations. With detailed deliberations and intense interaction with faculty, GBRC shows its willingness to join hands with sumandeep Vidyapeeth in their sponsored research project on oral cancer in which SV faculty will be the co-investigator.

FOLLOW UP NEWS OF PREVIOUS RESEARCH THEME

New Weapons Against Antibiotic-Resistant Bacteria



“It’s frustrating enough when progress in medicine plods along slowly, but downright alarming when it starts to backslide. Bacterial infections were considered essentially conquered in the 20th century, and now resistant strains are projected to kill more people than cancer by 2050.

While some people dispute the projected death rate, it’s agreed that bacteria are evolving resistance to antibiotics faster than the drug pipeline can produce new ones.”

“But in the battle between mankind and microbes, our side has a few new tactics. Some scientists are finding new, more precise strategies for adding to our antibiotic arsenal. Others are finding ways to slow down the relentless evolution of resistant bacteria. One lab, with new results published last week, is combining those tactics.

In that study, MIT medical engineer James Collins and colleagues used the basic antibiotic ciprofloxacin on lab mice, and made a detailed analysis of how the drug affected the metabolism of the mouse cells. What the researchers found was that the drug affected many activities of the mouse cells in counterproductive ways – favoring the spread of the bacteria. “It’s a relationship that’s been largely overlooked,” said Collins. In building up our antibiotic arsenal, he said, it would help for prescribers and patients to know, for example, that antibiotics can inhibit the immune system.

The ability to keep the immune system in high gear might come out of the sort of precision work being done at the European Molecular Biology Laboratory. There, biologist Nassos Typas and colleagues pitted a few strains of multi-drug-resistant bacteria against 3,000 combinations – antibiotics paired with each other, or with other drugs or food additives.”

The findings, published July 4 in the journal Nature

Stem cell transplants in treating Crohn's disease

A clinical trial has begun which will use stem cell transplants to grow a new immune system for people with untreatable Crohn's disease - a painful and chronic intestinal disease which affects at least 115,000 people in the UK.

The study, led by Queen Mary University of London and Bart's Health NHS trust, is funded with £2m from a Medical Research Council and National Institute for Health Research partnership, and will be recruiting patients from centers in Cambridge, Edinburgh, Liverpool, London, Nottingham, Oxford and Sheffield. The trial is coordinated through the Clinical Trials Unit at the University of Sheffield.

Novel Stem Cell Therapy Grows New Skin

In a clinical breakthrough, a team led by Michele de Luca from the Center for Regenerative Medicine in Modena, Italy recently published a treatment for JEB in the journal *Nature*. Researchers isolated stem cells from a JEB patient and repaired them by adding a corrected form of the mutated gene. In the lab, they grew sheets of healthy skin from the repaired cells, which, stunningly, were used to replace the majority of the patient's skin.

This first-of-its-kind treatment was performed on a 7-year-old boy with severe JEB who had lost approximately 80% of his skin. Doctors treating this young patient had exhausted all approved medical options and successfully petitioned the ethical review board at Ruhr-University in Bochum, Germany to approve the compassionate use of this experimental cell and gene therapy for this single patient.

Within a month of transplanting the skin grafts, the patient exhibited nearly complete restoration of all the affected areas. At the conclusion of the study, almost two years later, the regenerated skin was firmly adhered to the underlying layers, exhibiting molecular markers of normal skin, and withstanding stress without blistering. In this groundbreaking achievement, a combination of cell and gene therapy restored the function of a critical protein, which enabled regeneration of 80% of the patient's skin. (<https://www.statnews.com/2017/11/08/stem-cells-epidermolysis-bullosa>)

BUZZ AROUND THE WORLD

NEW RADIOTHERAPY MAY HELP TREAT LIVER CANCER: STUDY

However, many patients are not candidates for these therapies due to the presence of other conditions



“Before cone beam CT, we had the ability to focus radiation, but not with this level of accuracy”

— Salem, senior author of the study published in the journal *Radiology*

The procedure's name derives from the fact that surgeons divide the liver into a number of segments.

Using an imaging approach called cone beam CT, interventional radiologists gain a detailed view of the complex liver vasculature and can focus delivery of the Y90 to the relevant segment.

“Before cone beam CT, we had the ability to focus radiation, but not with this level of accuracy” said Salem, senior author of the study published in the journal *Radiology*.

A novel technique that delivers high doses of radiation to tumours while sparing the surrounding normal tissue may help treat patients with early-stage liver cancer, according to a study published today.

Curative treatment options for early-stage hepatocellular carcinoma (HCC), the most common type of liver cancer, include surgery, liver transplantation and radiofrequency ablation, said researchers from the Northwestern University Feinberg School of Medicine in the US.

However, many patients are not candidates for these therapies due to the presence of other conditions.

Radiation segmentectomy (RS) is a minimally invasive option that uses the radioisotope yttrium-90 (Y90) to destroy tumours.

The isotope is embedded into tiny beads that are delivered through a catheter into a blood vessel in the liver. They then travel to the site of the tumour, where they come to rest and deliver their radioactive effect while sparing much of the surrounding healthy tissue.

led long-term outcomes in 70 early-stage HCC patients who had undergone RS between 2003 and 2016.

They analysed the patients' responses to treatment based on two commonly used sets of criteria.

Based on one criteria, 90 per cent of patients showed positive response to the therapy of which 59 per cent showed complete response.

Based on a second criteria, 71 per cent achieved positive response, of which 16 per cent achieved complete response.

RS controlled the target tumour, slowed the time to disease progression and improved survival outcomes at rates comparable to radiofrequency ablation, surgery and transplantation for early-stage HCC patients.

Almost three-quarters of patients had no progression of cancer in the target tumour five years after treatment, researchers said.

Median overall survival was 6.7 years, and one-, three-, and five-year survival probabilities were 98 per cent, 86 per cent and 57 per cent, respectively, they said.

One-, three-, and five-year overall survival probability was 100 per cent, 82 per cent and 75 per cent in patients with a baseline tumour size of 3 centimeters or less.

“The results show that we are able to impart curative outcomes to these patients,” Salem said.

Treating arthritis without surgery

If you thought arthritis was reserved for those over 50, think again. A sedentary lifestyle and neglect of overall well-being, causes many youngsters and even children to face serious health issues like arthritis. The pain it brings causes immense discomfort and interferes with one's quality of life and general functioning.

There are over 100 different types of arthritis and related conditions. These diseases affect the musculoskeletal system, specifically the joints where two or more bones meet. The most common form of arthritis is osteoarthritis, which occurs more with age. The disease brings with it pain, stiffness and inflamed joints, resulting in reduced mobility.

ADVANCED PROCEDURES

Surgery is not the only option to fight arthritis. Sequentially Programmed Magnetic Field (SPMF) Therapy is a non-invasive, painless and safe treatment that gets you back on your feet and helps you walk away from pain. Pioneered by Dr. Cdr (Dr) V. G. Vasishtha (Head) of SHF Healthcare, this technology regenerates the cartilage and restores the mobility of arthritic joints.

HOW IT WORKS

The three week treatment procedure involves a computer controlled device called the AETIS, which administers SPMF on the affected joint for an hour everyday for 21 days. SPMF therapy regenerates the cartilage surrounding the joints and improves joint movement effortlessly and without pain. Over 7,000 cases have been successfully treated by the healthcare organisation since inception.

ADVANTAGES OF SPMF THERAPY

- Non-invasive and without side-effects
- Progress of the disease is halted
- Both knees can be treated simultaneously
- Increased mobility in patients

A cheaper alternative to other surgical procedures Dr Vasishtha was the principal investigator behind the clinical trials of osteoarthritis at the Institute of Aerospace Medicine, Indian Air Force, Bangalore. He has also been conferred numerous fellowships from international institutions and the 2006 Suvarna



Karnataka Rajyotsava Award by the Government, for his work on osteoarthritis. He is one of the only recognised guides to several MD students in Karnataka. He took an honourable discharge from the Air Force and began SHF Healthcare and Research Centre Private Limited to take this technology to the world.

Where: SHF Healthcare Centres in Mumbai, Pune and Bangalore. Call: 778219282

www.shfhealthcare.com
(*Procedures given are based on the expert's understanding of the said field)

(29th June 2018, Page S5, Times of India)

(30th July 2018, Page S5, Times of India)

8/7/2018

Guj finds new weapon to fight malnutrition - drumstick leaves - The Times of India - Ahmedabad, 2018-08-07

Guj finds new weapon to fight malnutrition - drumstick leaves

NHM Calls For Public Movement To Promote Saragvo Consumption

Prashant Rupera
@timesgroup.com

Vadodara: Drumstick or 'saragvo', which grows in abundance in and around Vadodara, has spiced up sambars and avjals in south India for years.

MIRACLE VEGGIE

➤ One cup drumstick can meet daily requirement of vitamins B6, A, C, B2 & iron

➤ 20 grams fresh drumstick leaves or 5 grams dried powder daily improves immunity, reduces malnutrition



➤ Reduces spiked blood sugar levels significantly

➤ Enhances gall bladder function

➤ Suffices the need of certain amino acids otherwise found only in red meat/dairy products

➤ Contains dietary fibre that aids digestion

Source: The Department of Food and Nutrition, M S University & National Health Mission, Gujarat

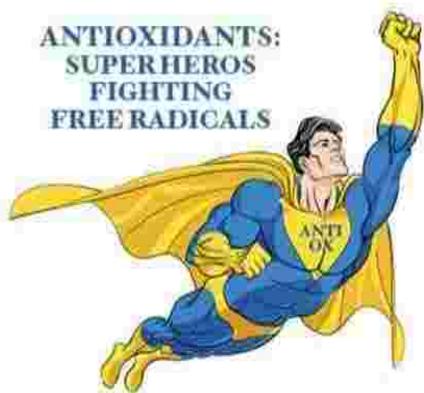
Researchers say clinical trials proved healing benefits of drumstick leaves

(7th August 2018, Page 1, Times of India)

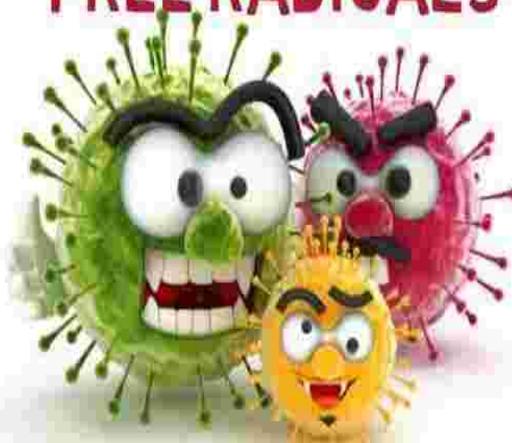
ANTIOXIDANTS



ANTIOXIDANTS:
SUPERHEROS
FIGHTING
FREE RADICALS



FREE RADICALS



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