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COMPASSIONATE FRIEND

Journal of Beauty Without Cruelty - India
An International Educational Charitable Trust for Animal Rights

In this Issue:
Fortified Foods
Vitamins and Minerals
Vegan *Mridangam*



Compassion



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Front Cover: A loving cat. Photo courtesy: Ritesh Raipure

From my Desk...

Camel Milk

The Food Safety and Standards Authority of India (FSSAI) were eventually convinced to allow camel milk to be marketed. The Gujarat Cooperative Milk Marketing Federation Ltd which sells products under the Amul brand, is getting it processed by Kutch's Sarhad Dairy. The milk will be derived from two breeds of camels: Katchchi and Kharai.

In the late 1990s the Rajasthan High Court had declared camel milk unfit for human consumption, and although the Supreme Court overturned the ruling a year later, FSSAI was refusing to legalise its sale.

In 2014, soon after granting the camel state animal status Rajasthan woke up to the so-called therapeutic potential of camel milk and kept approaching FSSAI – if not as food, as medicine by claiming it imparted several health benefits. Interestingly, in 2016 America warned a camel milk firm over bogus health benefit claims.

BWC feels the procurement, processing, selling and consumption of camel milk is bad enough... we hope it doesn't lead to cruel intensive farming of camels.

Testing on Animals

The Patanjali Research Institute has set up a laboratory in which all their medicines will be tested on rats and rabbits. The Committee for the Purpose of Controlling and Supervising Experiments on Animals and Patanjali's Animal Ethical Committee have granted permission to (mis)use these innocent creatures in their laboratory.

So now, not only will Patanjali medicines contain animal derived ingredients (most Ayurvedic medicines do) but they will have been tested on animals as well.

Animal activists will, no doubt, avoid Patanjali's products.

Gelatine Capsules

Pharmaceutical companies are reluctant to use veg capsules because they cost more than gelatine ones. Currently 98% are made from gelatine which is derived from the connective tissues, skin and bone of slaughtered animals such as cattle, pigs, poultry and may be fish.

Aquaculture

In 2016-17 seafood exports hit an all-time high: 11,34,948 tonnes worth US \$5.78 billion (nearly ₹37,125 crore) of seafood products were exported. The major importers continued to be USA and South East Asian countries.

Frozen shrimp exported was over 38% = 4,31,280 tonnes = 36,65,88,00,000 mind boggling number of shrimp killed. According to the Marine Products Export Development Authority the introduction of the *vannamei* shrimp in aquaculture farming contributed to the increase in exports.

Sugar

The Voice Society and Beauty Without Cruelty got 5 leading brands of sugar tested at Delhi's Shriram Institute for Industrial Research. We are very pleased to inform readers that DNA of animal origin was not detected in any of the samples. This vindicates BWC's stand that all sugar made in India is vegan.

Fall in Demand for Meat

Carabeef or buffalo meat exports have fallen by 11%. It began with the crackdown on illegal abattoirs in Uttar Pradesh, followed by the restriction on sale of cattle for slaughter at animal markets.

With prices of carabeef, mutton and chicken meat considerably rising, at long last the demand for animal flesh has also fallen within India.

Ban on *Manjha*

In response to petitions by animal activists, in July 2017 the National Green Tribunal imposed a nationwide ban on nylon, cotton coated with glass and Chinese *manjha* used for flying kites. All states have been directed to prohibit its "manufacture, sale, storage, purchase and use".

For decades Beauty Without Cruelty had been campaigning against the use of *manjha* which frequently resulted in grave injuries and even death to birds – animals and humans too.

Non-leather Footwear

The domestic footwear market is now estimated at ₹30,000 crore a year, but the good news is that 80% is not genuine/animal leather.

All shoe shops stock plenty of non-leather pairs. It is therefore no longer difficult to find and use comfortable and fashionable man-made humane footwear.

Diana Ratnagar
Chairperson

How Compassion Towards Animals Can Be Beneficial For You

according to **Sushil Rungta**
animals have emotions similar to human beings



Depicting compassion, a man carries an injured dog to safety through a flooded street in Chennai.
Photo courtesy: Reuters – Anindito Mukherjee.

If you have ever looked into the eyes of your children when they were infants, as most of us probably have, very likely you would have noticed innocence, trust, and curiosity in them. If you have ever looked into an animal's eyes, as most of us probably may not have, you would notice the same traits. And while animals continue to embody these traits throughout their lifetimes,

human beings, unfortunately do not. As we get older our innocence is replaced by doubts, we begin distrusting others, and quite often, adopt an attitude of indolence. Rarely, if ever at all, we act cruelly towards or are uncompassionate towards our children but when dealing with animals, we often behave thoughtlessly and sometimes, even brutally. We do not think twice before throwing a stone at them, or beating them with a stick, or kicking them, and the many other ways we inflict pain on the innocent but highly lovable creatures. Human beings are considered the most intelligent of all animals and also conscientious, but often, the mindless acts we perform would belie such claims. Why do we have such a callous attitude towards animals? Do we think they are immune to pain, or do they not have emotions and feelings? Harboring any such thoughts alone is a shame to our intelligence. Animals have the same emotions as human

beings though their ability to express their thoughts and feelings is usually limited and often, indiscernible by humans. We must have all read stories about the loyalty of animals, their unwavering devotion, and their unshakeable love. One of the most poignant stories is that of Hachikō, a dog in the family of a professor at the University of Tokyo. The professor would commute to work by train and Hachikō would accompany him to the Shibuya station (a suburb of Tokyo) to send him off. But what is remarkable is that Hachikō would also be at the railway station at the end of each day to accompany the professor back home. One day, in May 1925, the professor succumbed to a cerebral hemorrhage while teaching and did not return. Hachikō continued to go to the railway station for over nine years hoping that the professor would return. He continued the practice until he died in March 1935. In April 1934, a bronze statue in his likeness was erected at Shibuya Station, and Hachikō was present at its unveiling. Today, thousands of lovers go and pay obeisance to Hachikō's statue and vow to be as faithful to one another as Hachikō was to the professor. The story of Hachikō is neither isolated nor uncommon. Many true stories exist of kindness, loyalty, and love that animals have displayed towards human beings. In her book "Unlikely Heroes," Jennifer Holland recounts 37 true and highly inspiring stories of courage and heart from the animal kingdom when animals rescued human lives, like the pod of dolphins who protected swimmers in New Zealand from a



A child affectionately rubbing his forehead on a cow's face.
Photo courtesy: Incredible India.

great white shark by forming a screen around them. Or the story of Rojo the llama, who shines his very special light of loving kindness on the elderly patients in a rehab center in Oregon. Most of us are also familiar with Chetak, the horse of Maharana Pratap. During a war with the Mughal army, Chetak was badly wounded and bleeding profusely but sensing Maharana Pratap in danger rode him to safety. A recent Google search using the terms "animals who saved people's lives" returned over 41 million results. While there may not be that many stories on the subject, numerous true stories exist and not all have been documented. Many of us, even while compassionate towards animals, tend to be very callous about using goods made from animal skins or products tested on animals. We flaunt our purses made from alligator skins, wallets made from a cow's hide, and pamper our vanity by wearing fur coats made by skinning hundreds of minks or foxes and garments woven from threads obtained by boiling live silk worms. Admittedly, many a times we use these goods or products because we are unaware of



A woman being kind to a tired dog by carrying him on her shoulder. Photo courtesy: imgur.com.

the manufacturing process but largely because we do not care. To believe that animals are born to provide comfort and convenience to humans is reprehensible and not condonable. Patronizing attractions and performances, such as circuses or animal parks, is also a tacit approval of encouraging cruelty towards animals and should be discouraged. Fortunately, people are waking up to the barbaric ways animals are treated and beginning to protest. Because of such

backlash, “Ringling Bros. & Barnum & Bailey,” a circus that was founded over 150 years ago and touted as the “Greatest Show on Earth” ceased operations with a final performance on May 21 of this year. Sea World, the popular animal based theme park has discontinued its whale shows and has committed to shortly discontinue all shows where animals are used as acrobats. While every step taken to restore dignity to animals and treating them humanely is encouraging, sadly, not enough is being done. The protests need to be more boisterous, more assertive, and much more frequent. If the reasons cited above are not compelling enough to be compassionate towards animals, consider the therapeutic effects animals can have on humans. In the United States, many people who suffer from asthma keep a dog breed known as Chihuahua because it is widely believed that these dogs are either able to reverse asthma in some way or to “absorb” the condition in much the same fashion a sponge absorbs water. Medical science is beginning to acknowledge that playful acts with

animals can reduce stress, lower elevated blood pressure, and is beneficial to our health in several other ways. Perhaps you fondly recollect the days you returned home after a hard day’s work and all your fatigue just faded away the moment your child jumped into your lap, gleeful that you were home. Engaging playfully with animals is similarly stress-relieving. It is never too late for us to embrace a compassionate attitude towards animals and treat them with the same loving care that we show towards our children. It will not only make us happier but also have wonderful effects on our temperament and persona. The benefits we will receive cannot be described, they have to be experienced.



A goat as a friend brings a lot more happiness than as food. Photo courtesy: UNBOUND Blog.



Sushil Rungta, a BWC life member since 1979, writes about enhancing human potential. His other inspirational articles can be found on LinkedIn.com

Beware of Fortified Foods

There is absolutely no guarantee that ALL the micronutrients or premixes used for food fortification will ALWAYS be ethically acceptable to vegetarians says Khurshid Bhatena

Food fortification has now become an important issue although some manufacturers of packaged food articles have been adding nutrients for decades, like iodine added to salt to protect consumers against goitre.

In 2016, after the National Summit on Fortification of Foods, the Food Fortification Resource Centre was established. On its recommendations, the Food Safety and Standards Authority of India (FSSAI) made it mandatory for all manufacturers who voluntarily add nutrients to their food items, to affix the fortified logo on their packages.

Fortification is the addition of nutrients such as vitamins to packaged food articles. The purpose is to enhance the nutritional content to make sure that those who consume such items easily get additional vitamins and possible deficiencies are minimized.

But, has any one asked if vegetarians would like non-vegetarian substances to enrich the products?

As per government recommendations, salt can be fortified with iron and iodine. Iron, folic acid and Vitamin B can be added to wheat flour and rice; and Vitamins A and D to milk and oil.

There is absolutely no guarantee that ALL the micronutrients or premixes used for food fortification will ALWAYS be ethically acceptable to vegetarians. When asked by BWC, almost all manufacturers did not reply. The one that did reply said their premixes were “synthetic”. But, lab produced ingredients are not necessarily 100% veg. On saying so, the manufacturer did not reply BWC.

BWC therefore wrote to FSSAI citing two examples: that bovine haemoglobin concentrate could be used as a heme-iron fortificant in wheat flour, rice and salt; and, the folic acid added to rice, *atta* or *maida*, could be derived from animal liver.

This resulted in FSSAI immediately issuing directions restricting the use of heme-iron as a source of iron used as a fortificant, which is of course good. But there was no mention of restrictions on any other animal ingredients.

Since fortifiers can be of animal or non-animal origin, it makes BWC wonder if the manufacturers who affix the green symbol on packaged articles will even take the trouble to find out the



FORTIFIED
SAMPOORNA POSHAN
SWASTH JEEVAN

origin of the added nutrients, and if they turn out to be non-veg, will they affix the brown/red symbol on say wheat flour or salt. Let us not forget that these symbols are self-certification by manufacturers!

Irrespective of whether the nutrient added is of animal or non-animal origin, the F symbol in blue to be affixed on all fortified food articles will only indicate that the product has been fortified, with which nutrient, and its quantity. No way will consumers be absolutely certain if the fortifier used is actually veg or non-veg.

The only glimmer of hope left for those who do not want to take a chance in consuming every day use products that might contain animal ingredients, is that the government notification has not till now made fortification mandatory although it lays down guidelines and states quantities. It is up to manufacturers to fortify, or not fortify, their products. This lets us decide whether or not to buy fortified items.



*Khurshid Bhatena is
a Trustee & Honorary
Secretary of BWC-India*

Fact, not Fancy

Vitamins and Minerals

Those of us who are vegans need to definitely supplement our diets with Vitamin B12 says Nirmal Nischit

Vitamins and minerals are essential nutrients. The body can not function at optimum levels without them. It is therefore necessary to ensure that we eat a balanced diet that contains them. Some food sources of vitamins are listed below except for B12 which must be taken by vegans as a supplement.

Vitamin A stimulates cell reproduction, immunity, healthy skin, eyes and hair, growth and development of cells and bones, and the formation of some hormones. It is naturally found in yellow, orange and red, ripe fruits and dark leafy green vegetables such as sweet potato, carrots, kale, red pumpkin, apricots, musk melon, and mango.

Vitamin B1 or Thiamine is responsible for the production of energy, functioning of the heart, muscles and nervous system. It is naturally found in nuts, seeds, brown rice, whole wheat, green peas, asparagus, soy and navy beans.

Vitamin B2 or Riboflavin aids body growth, red cell reproduction and releases energy from carbohydrates. It is naturally found in almonds, mushrooms, sesame/til and spinach.

Vitamin B3 or Niacin is good for the functioning of the digestive system, skin and nerves and converts food into energy. It is naturally found in peanuts, mushrooms, green peas, sunflower seeds, avocado and mangos. Scientists from the Spanish National Cancer Research Centre, University of Valencia and IMDEA Food from Madrid have found that Vitamin B supplements stall aging specially Vitamin B3 and its derivatives.

Vitamin B5 or Pantothenic Acid is responsible for ones metabolism, formation of hormones and good cholesterol. It is naturally found in mushrooms, avocados, sun flower seeds, rice bran, sweet potatoes and guavas.

Vitamin B6 or Pyridoxine is for brain and nerve functioning, breaking proteins down and the formation of red blood cells. It is naturally found in sunflower seeds, pistachios, bananas, prunes, amaranth leaves/*chauli*, pineapple, potatoes.

Vitamin B7 or Biotin or Vitamin H is essential for cell growth. It is naturally found in peanuts.

Vitamin B9 or Folate or Folic Acid is essential for the formation of red blood cells, nervous system components, cell growth and DNA. It is naturally found in black-eyed beans/*lobia*, lentils, spinach, avocados, broccoli, mangos and guavas.

Vitamin B12 or Cobalamin is absolutely essential for vegans because it is needed for the normal functioning of the brain. All vegans are advised to periodically get a blood test done to check their B12 levels. B12 can be taken as a supplement - Wockhardt say their Methycobal tablets are veg. The dose required depends upon the severity of the deficiency and should be recommended by the physician. (The only veg source of B12 is seaweeds, but 100 grams per day would need to be consumed which is rare for Indians.)

Vitamin B Complex contains all 8 Vitamin Bs listed above. The gaps in the numbering of the B Vitamins are there because the substances were at one time believed to be Vitamins.

Vitamin C is an antioxidant, protects body tissue, forms collagen, helps absorption of iron and calcium as well as brain functioning. It is naturally found in yellow capsicum, guavas, kale, kiwi fruit, broccoli, strawberries, musk melon, oranges and lemons.

Vitamin D helps absorption of calcium and magnesium and maintains calcium and phosphorus levels in blood. Correction of its deficiency can significantly help people with ailments such as chronic kidney disease. Our bodies convert sunlight into Vitamin D which can be provided by at least 20 minutes of sunshine between 10.30 am to 2 pm thrice a week. Mushrooms are the only non-animal source of Vitamin D. It has been clinically established that Vitamin D protects against and enhances recovery of tuberculosis.

Vitamin E is an antioxidant, protects body tissue and forms red blood cells. It is naturally found in spinach, almonds, peanuts, sunflower seeds, avocados, olive oil, broccoli, red pumpkin and mangoes.

Vitamin K regulates calcium levels in blood and activates proteins for bone health. It is naturally found in basil/*tulsi*, green leafy vegetables, spring onions, chilli powder and hot spices, Ladies fingers, cucumber, grapes, pine nuts/*chilguza*, cashew nuts, prunes, cabbages, pomegranates and olive oil.

Beta Carotene is a powerful antioxidant that helps to protect against aging and lung cancer. It is naturally found in sweet potatoes, carrots, dark green leafy vegetables, red pumpkin, musk melon, red capsicum, dried apricots, green peas and broccoli.

Lycopene is an antioxidant which plays a role in preventing cancer and heart disease. It is naturally found in guavas, watermelon, tomatoes, papaya, grapefruit, red capsicum, asparagus, red cabbage, mangos and carrots.

Calcium is good for growth of bones and teeth and eases insomnia. It is naturally found in sesame seeds/*til*, curry leaves/*patta*, dark leafy greens, Ladies fingers, broccoli and almonds – two to twelve times more than in cow's milk!

Incidentally, calcium supplements are commonly made of carbonate, citrate, dolomite, di-calcium phosphate, tri-

calcium phosphate, coral, bone meal or oyster and other shells. Plant derived calcium (as compared to that of animal or mineral origin) from marine algae or seaweed is easy to absorb and of a better quality and is not considered bad for the heart as it does not raise the risk of plaque build-up in arteries. Vegan calcium capsules (and Vitamin D) can be ordered online from Unived.

Copper is responsible for our metabolism, absorption and storage of iron, formation of red blood cells and supplies oxygen to our bodies. It is naturally found in kale, mushrooms, sesame seeds/*til*, cashew nuts, chickpeas, prunes, and avocados.

Iron helps red blood cells carry oxygen to all parts of the body. It is naturally found in pumpkin seeds, all nuts, beans and pulses, whole grains, dark leafy greens, dates, mulberries, coconut, dark chocolate and cocoa powder. It should be noted that haemoglobin is not always an indicator of a low iron level. Ferritin accurately indicates iron storage in the body. An iron deficiency commonly results in falling, thinning, and lightening of hair, especially in women.

Iron supplements can be heme (from meat) or non-heme (non-animal). The latter should be taken on an empty stomach with say orange or lime juice (Vitamin C) to help absorption.

Magnesium is bone protein and makes new cells, activates B Vitamins, relaxes nerves and muscles, clots blood, aids insulin secretion and function. That's not all, it also helps absorption of calcium, Vitamin C and Potassium. It is naturally found in amaranth leaves/*chauli*, pumpkin seeds, lentils, whole grains like rye/*ragi*, dates, figs, bananas and dark chocolate.

Phosphorus forms bones, teeth and nerve cells. It is naturally found in pumpkin seeds, Brazil nuts, lentils, beans, potatoes, pomegranate, guavas, corn and oats.

Potassium is responsible for body growth and maintenance as well as proper heart functioning. It is naturally found in white beans, white mushrooms, potatoes, dried apricots, bananas, coconuts and guavas.

Selenium is an antioxidant and is necessary for the body to function properly. It is naturally found in sunflower

seeds, Brazil nuts, whole grains, mushrooms, Lima beans, dates, pomegranate, peas, and coconut.

Sodium regulates blood pressure, blood volume and fluid balance in our bodies, and helps in the functioning of muscles and nerves. It is naturally found in salt, beetroot, pumpkin seeds, sweet potatoes and coconuts.

Zinc helps our metabolism, proteins, carbohydrates and immune systems. It aids wound healing, growth and vision. It is naturally found in wheat germ, pumpkin seeds, cashew nuts, Lima and mung beans, mushrooms and oats.

Iodine is essential in the production of thyroid hormones that regulate growth and metabolism. It is naturally found in dried seaweed and potato.

Omega 3 forms cell walls. It is naturally found in flaxseed/*alsi*, chia/*subza* seeds and walnuts. **Omega 6** greatly helps diabetic, neuropathy, rheumatoid arthritis, PMS and skin disorders. It is naturally found in sunflower oil, nuts and seeds. In addition, *urad dal*, black gram and black lentils, peppermint herb, papaya and iceberg lettuce have the highest Omega 3 to Omega 6 ratio.

Fibre reduces the risk of coronary heart disease, and assists in maintaining normal blood glucose levels. It is naturally found in whole grains, beans, pulses, vegetables, fruits and nuts.

Carbohydrates play a critical role in the proper functioning of the immune system, fertilisation, blood clotting and the development of the body. They are basically found in sugar, dried fruit, grains particularly rice, cereals, jams, preserves and potatoes.

Protein builds muscles and is found in very many foods, not exclusively in non-veg items. Remember, over consumption of protein results in fat and puts stress on kidneys, whereas less protein intake can extend one's lifespan. (Read "Protein and Meat are NOT Synonyms" *Compassionate Friend* Winter 2016.)

Important Note: Vitamins work in tandem with other nutrients. For example, Vitamin A requires Zinc to benefit vision; Vitamin D is needed for Calcium absorption; and, Vitamin C for Iron. This kind of complexity makes it essential for us to get adequate nutrients required by our bodies from a variety of foods. And, those of us who are vegans need to take vegan supplements – Vitamin B12 definitely.

Birth of a Vegan Mridangam

Its creation involved extensive research spanning a period of about 5 years
by Dr K Varadarangan

The *mridangam* is the main percussion instrument used in Karnatic music, Bharatanatyam and Kuchipudi dance performances. Its shell is usually made of jackwood and the two sides are covered by the skin of a goat, cow and buffalo.

How it all Started

During September 2010, I chanced upon seeing some videos on the net that showed horrific abuse and brutal murder of animals for making leather shoes. The scenes in the videos haunted and shook me very deeply, and set me thinking. I was not using any leather products, but the *mridangam* I used as an accompaniment to my vocal concerts was made of animal skins. While portraying divinity and spirituality in my vocal concerts, I was contributing to the murder of cows, goats and buffalos.

At first, I thought the only way out for me was to give up performing on stage. Then, an inner voice told me that I should do something about solving this problem rather than simply deciding to give-up performing. It appeared quite scary to think of doing something that had no precedent, and the enormity of the task ahead was simply mind blowing. Nevertheless, I decided to give it a try and thus started my journey on the development of the synthetic *mridangam*.

Initial Research

The main challenge was to find a suitable material for the drumhead and also for the central black patch, known as the *karane*, for the right drumhead. The wonderful musical sound of the *mridangam* is due to this *karane* which renders the sound harmonic. My experiments began with a wooden shell. After studying how Western drums are made, I concluded that for the drumhead I could use polyester films. For the *karane*, finding the right material was a huge



Vegan Mridangam. Photo courtesy: Dr K Varadarangan

challenge, but after months of struggle, I found a rubbery material that could bond very well to the polyester drumhead and produce a nice sustained tone. It was the most important breakthrough in the entire project.

The drumhead was crude, so I devised a new drumhead which was formed by embedding the polyester film in a circular plastic channel using Epoxy. This formed a very good looking drumhead but it had a serious technical problem: the drumhead lost its pitch with just a few strokes. So after months of frustrating experiments, I abandoned this design for good.

Conventional <i>Mridangam</i>	SRI <i>Mridangam</i>	Advantage of SRI <i>Mridangam</i>
The drumheads use skins of goat, cow, and buffalo.	No animal skins are used.	Cruelty free.
Shells are made of wood.	Shells are made of fibreglass.	Environmentally friendly,
Weight is typically more than 10 Kgs.	Weight is typically 4.5 to 5 Kgs.	Light weight and highly travel friendly.
Pitch may change with temperature and humidity.	Pitch does not vary appreciably with temperature and humidity.	No need for frequent retuning during a performance.
Tonal qualities vary from instrument to instrument.	Excellent tonal clarity, sustain, and resonance.	Consistent tonal quality.
Difficult to tune over a wide tuning range.	Can be tuned over a range of 5-6 semitones.	Wide tuning range.
The adhesion of the Black patch <i>karane</i> to the skin is through the starch which acts like a glue.	The <i>karane</i> is chemically bonded to the drumhead membrane.	Eliminates the need for <i>karane</i> replacement.
Re-heading the shell has to be done only by a <i>mridangam</i> craftsman.	Heads are detachable.	Heads can be replaced by the users themselves.
For the left side, semolina paste needs to be applied.	The loading of the left head is done from within. So no external paste is required.	As the semolina paste is completely eliminated, it provides a larger playing area, protection from messing up with the sticky paste, and saves time.
Heads cannot be cleaned easily.	Heads can be cleaned with a moist cloth.	Heads can be cleaned with a moist cloth, which is unthinkable in the case of the animal skin heads.

I then came up with the idea of attaching small metal clamps at all the 16 tuning points on the periphery of the drumhead. After some initial hiccups, this arrangement worked quite well. It was yet another important breakthrough.

Fibreglass Shell

The next phase of development was to replace the wooden shell with a fibreglass shell. This phase too had its share of woes. It took me more than two years to understand and rectify the problems that arose.

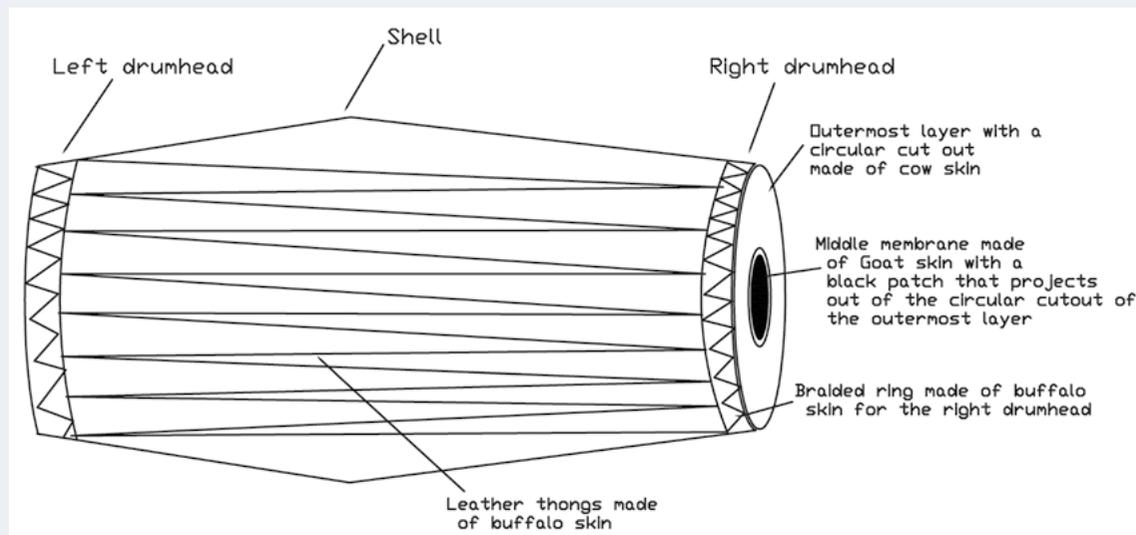
In order to test the reliability of the drumheads, I designed a beater which gave 3.5 million thuds to the drumhead! The drumhead withstood these thuds very well without the slightest damage!

Features of the

SRI *Mridangam*

The synthetic vegan *mridangam* is a state of the art percussion instrument that is built using a fibreglass shell and polyester drumheads. Popularly known as the SRI (Synthetic Rhythm Indian) *mridangam*, its creation involved extensive research spanning a period of about 5 years. The SRI *Mridangam* has a tonal performance quite similar to that of the conventional one.

Conventional Mridangam



Hides of three animals go into the making of a *Mridangam*: goat, cow and buffalo: The *mridanga* is constructed using a hollow shell carved out of a single piece of jackwood or any other suitable wood. The right head consists of three membranous coverings as shown in the figure. The inner most one is in the form an annular ring with its inner edge slightly projecting into the opening. The middle membrane is the main vibrating membrane to which a layer of permanent black paste made of boiled rice, iron ore and a few other ingredients is applied. Both these layers are made of goat skin. The outer most membrane having a circular cutout is made of cow skin. The left head consists of generally three membranes. The innermost membrane is made of goat skin. Two thick layers of buffalo skin each having large equi-diameter cutouts constitute the outer layers. All the layers are braided together at their outer edges and fastened to a long leather thong made of buffalo skin that weaves back and forth between the right and left sides of the drum holding the two heads together.

The Road Ahead

Since its launch in November 2015, the SRI *Mridangam* has become quite popular in Karnatic music circles. The support I have received from the *Mridangist* community is indeed overwhelming!

Now I intend to develop synthetic *tablas* and other instruments without using animal skins and eliminating wood where possible. I established Karunya Musicals: karunyamusicals.com with a vision to become a global manufacturer of all types of ethical musical instruments that do not use animal parts, and are environment friendly. Eco-friendly and cruelty-free musical instruments have now become a reality. No longer is there a need to cut trees or kill animals to make music!

 Dr K. Varadarangan holds a Master's degree in Physics and a PhD in Radio Antennas. He is a highly acclaimed Karnatic vocalist, musicologist and has several publications to his credit. He is also a vegan and BWC life member.

FYI Not Sweet Music to our Ears

Guts or animals' intestines are often used as string in musical instruments like violins and veenas and the bows made from horse hair. Although, commonly called catgut, it could be prepared from any animal species' intestines or sinews/serosa, such as sheep, goat, horse, mule, donkey and fish, although usually from the pig/hog or ox/cattle. The ability of the lining of the intestine to expand while eating and



shrink after digestion is what makes natural gut so desirable to string manufacturers. A single string uses any where from 7 to 16 piles of ribbons and the average animal provides 3 to 5 piles so it takes roughly three animals to make just one string.

Cakes/blocks of rosin (plant origin to which beeswax could have been added) are extensively used for their friction increasing capacity on bow hair; similarly, violin rosin and fine violin varnish could also contain beeswax and is applied to the bridges in other musical instruments like banjo and banjolele as well. In fact, decorative banjos can be made from the carapace of tortoises.

Previously tortoise-shell obtained from the carapace of certain tortoises and turtles especially the critically endangered hawksbill turtle, was always used for guitar and banjo picks. Now guitar picks of plastic are available; also, most guitar strings are made from metal or nylon. Tortex picks replicate tortoise-shell for guitarists, and the Torti pick for the banjo players.

Hide glue/binding glue/*saras/vajram* of animal origin is used in the making and repairing of string instruments. It is a form of gelatine that comes in slabs (looks like chocolate) and is cheap. Made from horns and hooves with added glycerine, the slabs need to be immersed into hot water to melt, and the resultant glue is utilised.

Some companies advocate the use of lanolin (derived from sheep), tallow (animal fat) and other animal oils to clean drumheads although the use of vegetable oils is satisfactory.

Leather is not only found in some musical instruments, but also in the cases used to carry them – they say strong cow hide is essential to protect the instrument during transport.

Vegan Recipe

Cluster Beans

Cluster or Guar beans/*Gawaar falli* are popular green beans and although slightly bitter in taste help digestion. They are low in calories and good for lowering blood sugar as well as cholesterol. Their consumption strengthens bones and improves blood circulation; even reduces anxiety and tension. 100 grams of guar beans contain as much as 130 mg of calcium.



Guar beans are indigenous to India and grown where ever it is dry, warm and arid, particularly in Rajasthan and Andhra Pradesh. The young tender pods are commonly eaten as a *subji*, whereas the seeds of mature pods are collected, dried and powdered to make guar gum which is a thickening agent in industrial food preparations.

80% of the world production of cluster beans occurs in India and Pakistan but due to a big demand the plant is being introduced elsewhere.

Goru Chikkudu Kaya Kura (serves 4)

Ingredients

- 300 grams *channa dal*
- 8 green chillies, chopped fine
- ½ inch ginger
- 500 grams cluster beans
- 3 tbsps oil
- ¼ tsp cumin/jeera
- 1 tsp *urad dal*
- 4 curry leaves/*patta*
- ¼ tsp mustard seeds/*rai*
- 2 dried red chillies
- 1 large onion, chopped

Preparation

Soak *channa dal* for 2 hours.
Rinse and drain water.
Add green chillies, ginger and a little water. Put in a blender to form a fine paste. Keep aside.
String and cut cluster beans. Add water. Boil. Drain water. Keep aside.
Heat oil. Sauté jeera, *urad dal*, curry *patta*, *rai* and red chillies till they pop.
Add chopped onion and fry for 2 minutes.
Add *channa dal* mixture and fry for another 3 minutes.
Add cluster beans. Mix well.
Stirring continuously, continue to cook for 2 more minutes.
Serve with steamed rice or *chapati*.

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to eating Animals, Fish and Poultry

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to produce meat than grain.



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the slaughtered animal
needs to be fed up to
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Meat is a second-hand food
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Go Veg!



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