Inside this Issue

- CSE – Laboratory report on Honey adulteration.
- Honey the wonder food – In cosmetics preparations.
- COVID-19 Vaccine Development & Challenges.
- Boil, Roast, Grill & Bake... Mix up your cooking style.

Consumer Guidance Society Of India (CGSI)
Block J, Azad Maidan, Mahapalika Marg, Mumbai 400001. Landline Phone: +91-22-2262 1612 / 2265 9715, Toll Free: 1800-222262
Cellular: 83569 46121 / 79771 20091 / 79771 20059, Email: cgsibom@gmail.com, mah.helpline@gmail.com, Website: www.cgsiindia.org
As a matter of Policy, **CGSI will henceforth communicate to all its members by electronic methods only.** To assist in this move forward, we need your support by filling up details of your Membership and date of Birth, Mailing address, Email ID, WhatsApp Number, Mobile Number etc., at the url: [https://tinyurl.com/y3nbf3ts](https://tinyurl.com/y3nbf3ts) or [https://docs.google.com/forms/d/e/1FAIpQLSfy5htrv03p4rm7PpBbWD7C4r0OHymswa695Riqxtvcezglw/viewform](https://docs.google.com/forms/d/e/1FAIpQLSfy5htrv03p4rm7PpBbWD7C4r0OHymswa695Riqxtvcezglw/viewform). This is a Google Docs Form and will take you not more than five minutes to fill up. Details required are available on the site, which is self-explanatory. Optionally, you may also send the following details by email, WhatsApp or India Post to CGSI.

Name: ________________________________

CGSI Membership Number: LM____________________OM_________________________

Address: _______________________________________________________________

_____________________________________________________________________

PIN No. ____________ Mobile No. __________________WhatsApp No __________________

Email id: _______________________________________________________________

**Please note that all communication regarding Membership, Keemat Magazine, Annual General Meetings, Membership Fees and all other matters will now be only by electronic means.**

We look forward to your help, support and cooperation in taking forward this positive step forward in the interest of Security, Safety and Service, as mentioned in our logo

**Managing Committee, CGSI.**

For a Free Return Call for assistance with the above, you may also send an SMS to 9773336400, with the subject ‘Assist’. 
The Year of Corona

2020 was a terrible year. 2021 cannot possibly be as bad — or can it? As we celebrate the new year, let us do a quick recap.

By year-end, India had more than 1 crore COVID-19 cases and almost 1.5 lakh deaths. Undoubtedly, this is the biggest calamity since Partition — but can we find a few positives somewhere? India’s healthcare system is widely criticized, but we have done better than any almost any country on two key parameters: cases/deaths as a percentage of population, and deaths as a percentage of cases (popularly known as case fatality rate). The worst seems to be over. The post-Diwali surge has been much less than we feared. New cases are declining in every state. Vaccines will be available in the next few months. Schools will soon re-open. Migrant workers are coming back. We will still struggle for many more months, and many of us have gone into debt, but gradually, lives are returning to normal.

Of course, these positives come with caveats attached. COVID-19 statistics must be taken with a pinch of salt because they rely heavily on rapid antigen tests, which give an unacceptably high percentage of false negatives. Social distancing is impossible in India. Once public transport opens up fully, cases will begin rising again. Nevertheless, we can be proud of what the country has achieved, and optimistic about 2021.

But wait — what about new mutations? The virus has undergone hundreds (maybe thousands) of mutations, as all viruses do. A new strain, containing multiple mutations, has caused chaos in Europe. It was reported in one patient in England in September. By year-end it had attacked tens of thousands of people in the UK, and spread to at least 15 countries. Scientists say the new strain spreads much faster (60-70 percent higher transmissibility) but is not necessarily more deadly, and that vaccines will continue to work. But nobody knows for sure.

One billion vaccines

More than 60% of the word’s vaccines are made in India. We have the world’s largest mass-vaccination program me, which has been efficiently run for several decades. But can we expand this program ten-fold in eight months?

The government aims to vaccinate 30 crore people by August and many more later, as needed. First, 1 crore healthcare workers, then 2 crore frontline workers (police, teachers, municipal workers etc.), and then 27 crore people selected based on three criteria: age (over 50), health risk (co-morbidities) and transmission risk (living in crowded localities). Two doses are needed, i.e., each person has to be vaccinated twice. All this has to be done without disrupting the Universal Immunization Program, which covers 5-6 crore women and children every year.

This will be the biggest and most complex vaccination program in history: 1.5 lakh nurses and ASHA workers, 30,000 vaccination centers, and tens of thousands of government staff from multiple ministries. Production of vaccines — itself a monumental task — is only the first step. Transport, storage, identifying and equipping vaccination centers, training of staff, supply of syringes and cotton swabs... Last but not least (literally), after one round of vaccinations, locating every vaccinated person to deliver the second dose. Another challenge is providing information (or fighting disinformation). Many people, educated and otherwise, are reluctant, especially with a new vaccine. Rumors on social media, no matter how foolish or far-fetched, could derail the program.

The ice-bucket challenge

Three vaccines will soon be approved, of which two will be made in India. Covaxin, developed by Bharat Biotech and the Indian Council of Medical Research, will be manufactured by Bharat Biotech. Covishield, developed in the UK by Oxford University and AstraZeneca, will be produced by the Serum Institute in Pune. The third vaccine, developed by Pfizer of USA and BioNTech of Germany, will be imported. A fourth vaccine, made by American firm Moderna, is likely to be approved in early 2021; several others are in the pipeline.

The biggest challenge is cold storage. The two made-in-India vaccines can be stored in regular drug refrigerators (+2 to +8 degrees). The foreign vaccines are more demanding. The Moderna vaccine can be stored in special freezers (minus 20 degrees) for 6 months, or in regular drug refrigerators for 30 days. The Pfizer vaccine must be stored at minus 70; once removed from the deep freeze, it can remain stable in regular drug refrigerators only for 5 days. In all, India’s vaccination centers have about 85,000 refrigerators of various types (temperature 2-8 degrees). The government says this is sufficient to vaccinate 30 crore people. Even if this is true, many more fridges will be needed as the program expands. We have limited numbers of minus-20 capability, and except for a few freezers at advanced research institutes, none with minus-70 capability.

Maybe Pfizer and Moderna could supply 10-15 lakh doses to big-city private hospitals, which will administer them to patients who can afford high prices. But unless something changes dramatically, we will have to rely on Indian-made vaccines for reasons of price, reliable supply and storage temperature. Production has already begun, even before official approval. The Serum Institute is producing 50 to 60 million doses of Covishield per month, and plans to scale up to 100 million per month by February. Syringe manufacturers are gearing up as well. The country’s biggest manufacturer, Hindustan Syringes, makes 70 crore syringes per year, and plans to expand to 100 crores per year by mid-2021.

Positive aspects

We can always find silver linings if we look hard enough. We have garbage and disease everywhere, but this has made our bodies more resistant, and this resistance substantially reduced the impact of COVID-19. Our children are addicted to cell phones, but this addiction helped them adapt to online classes. We took social contact for granted. COVID-19 restrictions made us realize how important these contacts were, and perhaps brought families even closer together, emotionally if not physically. Our movements are restricted, but I would not be surprised if some people are actually exercising more than before — taking longer and more regular walks because they are tired of sitting at home all day.

So, three cheers to the new year, and the new normal! Best wishes for a healthy and prosperous 2021.

Dūjuः प्रियवादी च नैव विश्वासकारणम्।
मधु निषिद्धि जिहार्ये हिमदे तु हलाहलम्॥

An evil person must never be trusted even if he talks sweet, because he has a sweet tongue, but has a heart filled with poison.

Keemat: January – February 2021
Letters to the Editor / CGSI

Just read the latest issue online. Your editorial was the best analysis of the farmers’ problem that I have seen. Very informative. How do I now, work on the crossword puzzle etc.....?

Sakuntala Narasimhan, Ex Vice-President, CGSI.

Mumbai’s consumer forum imposes a fine of Rs 5,000 on a man over ‘false’ complaint

A suburban consumer disputes redressal forum (commission), while dismissing a complaint has imposed compensatory cost of Rs. 5,000 on a complainant for making a false complaint, with the idea of curb such practices. The Chembur resident had filed a complaint against Mahanagar Gas Limited (MGL) in 2010 for levying “exorbitant” bills without reading the gas meter since 2009. The judgment by the commission’s president Shubhada Tulankar passed said it has found that there is no basis to file the complaint. “On the other hand, the evidence depicts the complainant is not regular in paying bills and he is trying to take advantage of his own wrong for getting wrongful gain”, it said. Further the body called the complaint “patently false and vexatious” and to curb such practice, it is imposing a compensatory cost on the complainant. The complainant had claimed Rs. 15,000 for the exorbitant bills the company levied on him and Rs. 50,000 for mental harassment and financial loss to him, as well as claimed litigation cost.

MGL has opposed the complaint calling it ‘false’ and said the complaint is filed to harass the company and enjoy cooking gas at less price. It told the commission that the complainant Balkrushna Zende had not cleared the bills from 2009 and hence delayed payment charges had been levied. Further it said that the meter being inside the house, the customer’s co-operation is necessary in taking the reading. When its representatives had gone to his residence to take reading, many times the flat was closed. The customer body stated in its order that while the complaint had claimed a sudden rise in bill amount after 2009, he has not clarified specifically about which bill he has grievance with nor has he supported the allegation with evidence. The commission also questioned why Zende had not made any email, letter correspondences or contacted the company’s customer care if he had the grievance that the meter reader was not visiting his residence. In the absence of such cogent evidence, the it said his contention that bills were exorbitant and “by no stretch of imagination” they can be called so.

The commission also questioned why Zende had not made any email, letter correspondences or contacted the company’s customer care if he had the grievance that the meter reader was not visiting his residence. In the absence of such cogent evidence, the it said his contention that bills were exorbitant and “by no stretch of imagination” they can be called so.

The views expressed in ‘Keemat’ do not necessarily reflect those of CGSI, but rather are personal opinions of the author(s) concerned.

CONSUMER GUIDANCE SOCIETY OF INDIA (CGSI)


Block J, Azad Maidan, Opposite Cama Hospital, Mahapalika Marg, Mumbai 400001.

Website: www.cgsiindia.org; E-mail: cgsibom@gmail.com; mah.helpline@gmail.com;

Cellular: 8356946121

Toll Free Helpline: 1800 – 222626

Mumbai: January – February 2021

Keemat: January – February 2021
There are plenty of ways to cook up delicious flavorful foods without adding too much of unnecessary extras. We all know fried foods should be avoided as far as possible, but many do not know how their cooking methods affect the nutritional value of the food.

Heat can break down and destroy 15 to 20% of vitamins in vegetables – especially vitamin C, folate and potassium. That is why it is said that raw, uncooked food maintains all its nutritional value and keeps you healthy. The manner in which heat is applied to food during cooking determines the type of cooking method. The methods used to cook food can be classified mainly under 2 different categories:

**Moist Heat Methods**

**BOILING:** Food may be boiled in any liquid, which is bubbling at the surface such as stock, milk, juices, syrups. It is easy and quick. The large volume of water dissolves and washes away water-soluble vitamins and minerals. Whereas some oxidants availability increases when cooked such as lycopene in tomatoes. Also, level of beta-carotene increases after carrots are cooked.

**STEAMING:** – Steaming retains all the natural goodness of food. It is always good to add a little seasoning first, be it salt or squeeze of lemon juice. Steaming of broccoli is good for health as it turns glucosinolate into isothiocynates which inhibit the growth of cancer cells and keep the highest level of nutrients. Though steaming does not add to taste. This method is ideal for making idlis, dhokla or other fermented products. It makes the food easily digestible and nutritious. It is also good when you want to cut down on calories, as there is no need to add fat and food retains its nutrients better, as leaching of nutrients is minimum.

**POACHING:** Basically, it means cooking in minimum amount of water just below boiling point. It can decrease nutrient content to some level but a great way to cook eggs, fish or fruit.

**BLANCHING:** In meal preparation it is sometimes necessary to peel off skins of fruits, nuts, almonds, vegetables without making food tender. This process helps to maintain a good texture, improves color and flavor of foods. In addition, removing peel can improve digestibility, eliminates enzyme microbial activity and makes it safe for consumption in salads, sandwiches, puddings etc.

**PRESSURE COOKING:** Cooking time is considerably reduced in this method. As steam is not allowed to escape, the volatile flavor compounds remain in the food, and the shorter cooking time enhances nutrient retention and palatability.

**Dry Heat Methods**

**ROASTING:** This method involves direct transfer of heat from the source to food, water or moisture is not used in this method, however fat may be applied on the surface of food. This type of cooking is very appealing because it is served straight from the fire and is fresh and aromatic. It can also be done in heavy pans and the process involves sealing the food surface through coagulation of surface protein brought about by direct heat and high temperature. The sealing prevents further evaporation of moisture from middle of food (usually meat) retaining its juices and natural flavor.

Roasting is a slow cooking process and hence suited to cook bigger pieces over a period of time. Besides meat, corn, root vegetables like potato, sweet potato asparagus may be roasted. In our country peanuts, popcorn and Bengal gram are roasted in a ‘kadai’ containing sand or salt which are continuously heated over a source of heat. Nutrients are not condemned in the process of roasting. Mushrooms, asparagus and cabbage supply more antioxidant compounds when cooked instead of raw.

**GRILLING:** In terms of getting maximum nutrition without sacrificing flavor, grilling is great cooking method. It is fast cooking method and gives a nice brown charred color to the meat. It requires minimum added fats and imparts a smoky flavor while keeping meats and veggies juicy and tender. Cheese and preparation of cheese like pizza, chops, bacon, capiscum and other thin cuts are grilled since the intensity of fire is high. Whereas some research says that regularly consuming charred well-done meats may increase the risk of pancreatic cancer and breast cancer.

Two unhealthy chemicals formed during grilling are heterocyclic amines or HCA, and polycystic aromatic hydrocarbons or PAHs – known to cause cancer in animals. Cooking at high temperature can also produce chemical reaction between fat and proteins in meats creating toxins that cause inflammation and imbalance of antioxidants in the body, which can lead to increased risk to diabetes and cardiovascular diseases. So best is to eat BBQ once in a while with lean cuts of meat that need less time to cook. It takes more effort and skill to grill than other methods of cooking.

**BAKING:** When oven or tandoor is used in preparation of dishes in which hot air circulates around the food placed in it. It is a dry heat method of cooking and action of dry heat is combined with steam which is generated from the moisture content of food while food is cooking. Foods baked are brown and crispy on top due to heat on the surface of the food. and soft and porous in the center.

Cakes, breads, puddings, vegetables, paneer tikka are some of the dishes. In Baking fat is used in some amount, so you should avoid if you want to lose weight. Moreover, vitamin B12 is lost when you use baking soda which is used in making breads, cookies, cakes etc. and moreover refined flour and sugar is used in preparation of these products.

**SAUTÉING:** This method of cooking requires little bit of oil just to coat your meat and veggies. It is used mainly for bite size pieces of meat, grains like rice & quinoa, and thinly sliced bell peppers, juliened carrots and snow peas. This is very healthy way of cooking. Mediterranean diet usually uses this method.

**FRYING:** The food to be cooked is completely or partially immersed in hot oil till it acquires a golden brown and crisp feel. Fried foods are crisp, attractive, flavorful, aromatic and macrobiotically safe due to high temperature at which cooking is done. Fried foods differ greatly in texture, flavor, appearance and taste. These fried foods tend to be high in calories and trans fats, so eating a lot of them can have negative effect on your health.

One small potato around 100g contains 93 calories and 0 grams of fat but when you deep fry it, it has 316 calories and 17 g of fat. Fried foods are often cooked in processed vegetable or seed oils, when heated these oils can form trans fats which can cause number of health problems as obesity, diabetes, high cholesterol level, etc.

**MICROWAVE COOKING:** This method involves use of high frequency electromagnetic waves which penetrate the food and produce frictional heat by setting up vibrations within the food.

The two advantages of this type of cooking are simple, food is cooked fast (within minutes) and convenient at the same time. It is excellent method of re-heating or finishing individual portions of food on demand in restaurants. It results in minimal nutrient destruction. Make sure you use a microwave safe container.
Never microwave a plastic container unless it is specifically labelled safe to use.

Disadvantages of microwaving is food is not cooked evenly so may cause food poisoning, so ensure food is cooked well and evenly, texture is poor, it often dries out the food. Many people believe that microwaves produce harmful non-ionizing radiations which are similar to our cell phone radiations and damage cancer fighting compounds like flavonoids and antioxidants. Also be careful when heating water above boiling point as it can erupt out of container and burn you.

RAW EATING: There are many benefits of incorporating raw foods in your diet on daily basis. This is mostly plant based, more vitamins, minerals and fiber are consumed with no added sugars and fats from cooking. One should eat more of fruits, veggies and lean proteins, but you can change the way of cooking so that you get maximum benefits and nutrition and your taste buds will relish the food!

What Can Help Prevent a Stroke?

A stroke happens when the flow of blood is cut off to part of your brain. Most are caused by a clot or something else that blocks the flow. These are called ischemic strokes. About 10% are caused by bleeding in the brain. These are hemorrhagic strokes. Older age and family history of strokes are among the things that make you more likely to have a stroke. You can’t turn back the clock or change your relatives. Still, experts say 80% of strokes can be prevented. A quarter of Americans who have strokes have had one before. So, what can you do to tilt the odds in your favor?

Lower Your Blood Pressure: High blood pressure is the No. 1 cause of strokes. It’s the reason for more than half of them. A normal blood pressure reading lower than 120/80. If yours is regularly above 130/80, you might have high blood pressure, or hypertension. If it’s not managed well, high blood pressure can make you 4-6 times more likely to have a stroke. This is because it can thicken the artery walls and make cholesterol or other fats build up and form plaques. If one of those breaks free, it can block your brain’s blood supply. High blood pressure also can weaken arteries and make them more likely to burst, which would cause a hemorrhagic stroke. If you have high blood pressure, work with your doctor to keep your pressure in the healthy range. Medication and lifestyle changes, such as regular exercise and eating healthy, can help.

Stay Away from Smoking: You double your risk of strokes if you use tobacco. Nicotine in cigarettes raises blood pressure, and carbon monoxide in smoke lowers the amount of oxygen your blood can carry. Even breathing second hand smoke can raise your chances of a stroke. Tobacco can also:

• Raise your levels of a blood fat called triglycerides
• Lower your levels of “good” HDL cholesterol
• Make your blood sticky and more likely to clot
• Make plaque buildup more likely
• Thicken and narrow blood vessels and damage their linings
Talk to your doctor about ways to quit smoking. Nicotine patches and counselling can help. Don’t give up if you don’t succeed the first time.

Manage Your Heart: An irregular heartbeat, called atrial fibrillation (AFib), is behind some strokes caused by blood clots. AFib makes blood pool in your heart, where it can clot. If that clot travels to your brain, it can cause a stroke. You can have AFib because of high blood pressure, plaques in your arteries, heart failure, and other reasons. Medications, medical procedures, and surgery can get your heart back into normal rhythm. If you don’t know if you have AFib but feel heart flutters or have shortness of breath, see your doctor.

Cut the Booze: Too much alcohol can raise your blood pressure and your triglycerides. Limit yourself to no more than two drinks a day if you’re a man and one drink if you’re a woman. Drinking too much can cause AFib, too -- binge drinking (downing 4-5 drinks within 2 hours) can trigger an irregular heartbeat.

Control Your Diabetes: High blood sugar can make you 2-4 times more likely to have a stroke. If it’s not managed well, diabetes can lead to fatty deposits or clots inside your blood vessels. This can narrow the ones in your brain and neck and might cut off the blood supply to the brain. If you have diabetes, check your blood sugar regularly, take medications as prescribed, and see your doctor every few months so they can keep an eye on your levels.

Exercise: Being a couch potato can lead to obesity, high cholesterol, diabetes, and high blood pressure -- a recipe for stroke. So, get moving. You don’t have to run a marathon. It’s enough to work out 30 minutes, 5 days a week. You should do enough to make you breathe hard, but not huff and puff. Talk to your doctor before you start exercising.

Eat Better Foods: Healthy eating can lower your risk of a stroke and help you shed weight if you need to. Load up on fresh fruits and veggies (broccoli, Brussel sprouts, and leafy greens like spinach are best) every day. Choose lean proteins and high-fiber foods. Stay away from trans and saturated fats, which can clog your arteries. Cut salt, and avoid processed foods. They’re often loaded with salt, which can raise your blood pressure, and trans fats.

Watch the Cholesterol: Too much of this can clog your arteries and lead to heart attack and stroke. Keep your numbers in the healthy range:

• Total cholesterol: under 200 mg/dL of blood
• LDL (bad) cholesterol: under 100 mg/dL
• HDL (good) cholesterol: above 60 mg/dL

If diet and exercise aren’t enough to keep your cholesterol in check, your doctor may recommend medication.

Don’t Ignore the Snore: Loud, constant snoring may be a sign of a disorder called sleep apnea, which can make you stop breathing hundreds of times during the night. It can boost your chances a stroke by keeping you from getting enough oxygen and raising your blood pressure.

Take Your Meds: If you’ve already had a stroke, make sure to take any medicine your doctor gives you to help prevent another one. At least 25% of people who have a stroke stop taking one or more of their drugs within 3 months. That’s especially dangerous because that’s when you’re most likely to have another one.

An Aspirin a Day? A low-dose aspirin every day may prevent strokes and heart attacks in people at higher risk. It acts as blood thinner, preventing blood clots from forming in arteries partly blocked by cholesterol and plaque. It’s not for everyone, though, so don’t start taking aspirin without talking to your doctor first.

Don’t give someone an aspirin if they’re showing signs of stroke like slurred speech or a drooping face. It can make a hemorrhagic stroke worse, call the doctor.

Keemat: January – February 2021
Introduction

The Centre for Science and Environment (CSE) conducted an investigation to understand adulteration in honey. As part of this, honey samples were sent for testing at two laboratories. These laboratories were:

Centre for Analysis and Learning in Livestock and Food (CALF), National Dairy Development Board (NDDB), Gujarat, India, A renowned food testing laboratory in Germany. This report comprise the results of tests conducted at both laboratories.

(The name of the German laboratory is not disclosed as per the agreed upon terms and conditions with the laboratory. The same along with other details can be shared with the government enforcement agencies, if required.)

Samples sent for testing

A total of 13 honey brands were tested. Eight of these are big brands selling processed honey. Five are niche brands. Four out these five sell raw honey.

Samples were purchased during Aug-Nov, 2020 from retail stores in Delhi and major online platforms. For each brand, multiple samples of the same batch were purchased. In addition, in some cases, samples of different batches were also purchased.

Samples sent to CALF, NDDB were tested on parameters set by the Food Safety and Standards Authority of India (FSSAI) operationalized in 2020. Key adulteration parameters are tests for C4/C3 sugars, foreign oligosaccharides, Specific Marker for Rice (SMR) i.e., 2-acetylfuran-3-glucopyranoside (AFGP).

- C4 sugars are those derived from C4 plants (plants using C4 photosynthetic pathway) such as corn, sugarcane
- C3 sugars are those derived from C3 plants (plants using C3 photosynthetic pathway) such as rice, beet root
- Foreign oligosaccharides are starch-based polysaccharide sugars such as from rice and corn

Samples sent to the German lab were tested for Trace Marker for Rice syrup (TMR) and Nuclear Magnetic Resonance (NMR) profiling. These two tests are not part of the current FSSAI standards. NMR is an advanced test to check for adulteration and confirmation of origin of honey.

Samples were sent to the two laboratories in different phases as the study evolved (see Table 1 for details of samples sent for testing).

<table>
<thead>
<tr>
<th>Phase</th>
<th>Samples</th>
<th>Sent to laboratory</th>
<th>Parameters tested for</th>
<th>Test report date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8 processed honey samples (Dabur, Patanjali, Apis Himalaya, Baidyanath, Zandu, Nature’s Nectar, Hitkary, Saffola)</td>
<td>CALF, NDDB, India</td>
<td>Quality and adulteration parameters as per FSSAI</td>
<td>September 28, 2020</td>
</tr>
<tr>
<td>2</td>
<td>5 samples (1 processed: Markfed Sohna and 4 raw: Dadev, Indigenous, Hi Honey, Societe Naturelle)</td>
<td>CALF, NDDB, India</td>
<td>Quality and adulteration parameters as per FSSAI</td>
<td>November 1, 2020</td>
</tr>
<tr>
<td>3</td>
<td>13 samples (same batch as phase I and II) and 4 samples (2 each of different batches of Dabur and Saffola*)</td>
<td>German lab</td>
<td>NMR profiling, TMR</td>
<td>November 6-9, 2020</td>
</tr>
<tr>
<td>4</td>
<td>6 spiked samples (adulterated with sugar syrups) and 1 control sample (raw honey)</td>
<td>CALF, NDDB, India</td>
<td>Key adulteration parameters as per FSSAI**</td>
<td>November 6-9, 2020</td>
</tr>
<tr>
<td>5</td>
<td>5 samples (different batch samples of major brands which had failed NMR in phase 3)</td>
<td>German lab</td>
<td>NMR profiling, TMR</td>
<td>November 17-26, 2020</td>
</tr>
</tbody>
</table>

*Additional samples of Dabur and Saffola were sent as they claim that their products are NMR-tested.
**These are tests for C4/C3 sugars and foreign oligosaccharides.

3. Laboratory test results of honey samples – key adulteration parameters

Overall, 17 out of 22 samples (77 per cent) were found to be adulterated. Samples of three out of 13 brands passed all tests. These include five samples in total from Saffola, Markfed Sohna and Nature’s Nectar (one out of two samples).

Summary of brand-wise results is mentioned below (for details see Website: www.cseindia.org Laboratory test results of honey samples)

- Dabur honey passed tests for C3 and C4 sugar, but failed the NMR tests on all three samples. In one sample it also failed on TMR
- Patanjali honey passed tests for C3 and C4 sugar, but failed on TMR and NMR tests in both samples
- Apis Himalaya honey failed on test for foreign oligosaccharides and SMR and also failed the TMR and NMR tests
• Baidyanath honey passed tests for C3 and C4 sugar, but failed on NMR. In one sample it also failed on TMR
• Zandu honey passed tests for C3 and C4 sugar and for TMR but failed on NMR
• Nature’s Nectar passed tests for C3 and C4 sugar and for TMR. One sample failed NMR and one sample passed NMR
• Hitkary passed tests for C3 and C4 sugar but failed on TMR and NMR
• Saffola honey passed tests for C3 and C4 sugar and passed on TMR and NMR
• Markfed Sohna passed tests for C3 and C4 sugar and passed on TMR and NMR
• Dadev forest honey failed tests for C4 sugar and failed on NMR. It passed on TMR
• Indigenous honey passed tests for C3 and C4 sugar and for TMR, but failed on NMR
• Hi Honey failed tests for C4 and failed on NMR. It passed on TMR
• Societe Naturelle honey failed tests for C4 and passed on foreign oligosaccharides, TMR and NMR

4. Laboratory test results of spiked honey samples – key adulteration parameters

Six honey samples were adulterated by spiking with syrups to check if adulteration with syrups can go undetected. Scientists from CSE’s Environmental Monitoring Lab prepared these samples using scientific tools and procedures. These six samples and a control sample (raw honey) were sent for testing for C4/C3 sugars and foreign oligosaccharides at the same Indian laboratory (CALF, NDDB), which had tested other honey samples.

Following two sets of syrups which were obtained as part of the investigation were used:
• Syrups sent by syrup manufacturers in China with claims of passing tests for C4/C3 sugar
• Syrup obtained from Jaspur; India known as “all pass” syrup

Syrups were mixed in different proportions (25%, 50%, 75%) in the following two types of honey:
• Raw honey sourced directly from a beekeeper in Bharatpur. This was from the nectar of ber plant sucked up by bees in Jaisalmer. This honey was also used as a control sample without mixing with syrup
• A branded honey sample that had passed adulteration tests at CALF, NDDB laboratory

Summary of the test results is mentioned below (for details, Website: www.cseindia.org Laboratory test results of spiked honey samples)

• Samples adulterated with 25% and 50% sugar syrup passed all tests. This includes those mixed with both Indian and Chinese syrups
• Only one sample with 75% Chinese syrup, failed the test.

Members can get the full report on visiting “Centre for Science and Environment (CSE)”, Website: www.cseindia.org
HONEY THE WONDER FOOD – IN COSMETIC PREPARATIONS
Dr. Sitaram Dixit, Chairman CGSI.

Pure honey considered as a nature's ambrosia to humans is well known for its healing and soothing powers. One of nature's wonders, pure honey rich is in sugars, proteins and mineral salts, is a sweet-smelling viscous liquid, holding a very honored and esteemed position in Ayurvedic medicine and natural care. Egyptians used honey in their medical formulas and the Greeks used it for curing skin disorders. It is a tradition in China to apply a blend of honey and ground orange seeds to keep skin free of any blemish. Even today by many Chinese men and women follow this ancient beauty treatment.

HISTORICAL FACTS AND USAGE OF HONEY

Egyptian queen Cleopatra regularly took honey and milk baths to keep her skin young and healthy. Madame du Barry used honey as a facial mask to improve her complexion and please her master Louis XV. English Queen Anne, Sarah the duchess of Marlborough, used honey in hair care to maintain their long hair lustrous, thick, strong, and beautiful. Honey that has been in use in beauty preparations since ancient times is just as popular today finding use in an increasing number of skin and hair care cosmetic products. Popular health and beauty products containing honey include bath and shower products, body scrubs, face creams, skin lotions and hair conditioners.

As we grow older, our skin ages reducing its capacity to retain water, making it dry and wrinkled. Additionally, mental stress, solar UV radiation, exposure to chemical agents, polluted environment also contributes in damaging the skin and causing premature aging. The skin's ability to retain moisture and remain hydrated is a very important factor in maintaining softness, suppleness and elasticity of human skin.

NATURAL PROPERTIES

Honey is a natural humectant which means that it has an ability to attract and retain moisture. Honey's natural hydrating property makes it an ideal moisturizer. Pure honey is non-irritant and so is suitable for preparing skin sensitive and baby products. Scientific studies have revealed that honey has significant amounts of antioxidant properties. Human body uses antioxidants to eliminate free radicals or molecules that whiz around in healthy cells and damage them. Use of honey helps in protecting skin from damage, and also aids in skin rejuvenation.

Honey due of its high sugar content, limits the amount of moisture available for bacterial growth. Its low pH and insufficient protein content deprive bacteria of nitrogen vital for its growth. Natural antioxidants and hydrogen peroxide present in honey play a major part in inhibiting growth of bacteria. When honey comes in contact with human skin it releases hydrogen peroxide. Hydrogen peroxide is produced by glucose oxidase an enzyme present in honey and introduced by honey bee.

Natural honey that contains no preservatives or additives and we can use it straight as available from nature without processing or refining. Recent medical research documents claim honey to be an effective antimicrobial agent as it can inhibit growth of certain bacteria’s making it a useful ingredient in treating minor acne flare-ups.

HONEY'S PROSPECTS IN SCIENTIFIC RESEARCH.

Alpha hydroxyl acids (AHAs) are important ingredients in many skin care products because of its ability to exfoliate skin. Exfoliation means surface removal of dead skin cells and aiding renewal and growth of new skin cells giving skin a younger more vibrant look. Exfoliation can cause skin irritation in some.

Honey's natural moisturizing property and non-irritant nature makes it a perfect fit for research currently underway in developing a honey based AHA for use in exfoliating skin care cosmetics. Honey works best on skin when used fresh rather than from a ready to use personal care products claiming to do wonders with honey added in it at infinitesimal amounts. Below is a list of some typical traditional beauty recipes.

1. Skin Cleanser: Mix 15 gm honey with 30 gm of finely ground almonds and 3 gm of lemon juice. Gently rub this mixture onto face and rinse with warm water.
2. Skin Clarifier: Wash the face with warm water containing a little of edible salt. Using a cloth or cotton ball apply salt water to soften any minor acne flare-ups. This might take a few minutes of continuous application. Using a swab apply honey on the affected portion; leave it for about 15 minutes. Rinse with water and pat dry.
3. Skin Toner: Mash 15 gm of honey with a peeled cored apple. Apply the paste obtained onto the face and leave it for about 20 minutes. Clean the paste out with cold water.
4. Skin Conditioner: Mix 5 gm of honey with 5 gm of vegetable oil and 2 gm of lemon juice. Rub the mixture on dry skin, leave it for 15 minutes and rinse off.
5. Skin Softening Bath Water: Add honey directly to bath water and bathe.
6. Facial Mask: Mix 15 gm honey, 5 gm glycerin, and 1 egg white with gram flour (Besan) to form a smooth paste. Apply the paste on skin and leave it for about 15 minutes. Wash the paste off with warm water.
7. Hair Conditioner: Mix 50 gm honey with 25 gm of vegetable oil. Apply and coat this mix throughout the hair. Leave it on the hair for half an hour, then shampoo well, rinse and dry normally.
8. Hair Shine: Mix 6 gm of honey in a liter of warm water. Pour this mixture in a washed and shampooed hair. Without further rinsing dry the hair normally.

HONEY BEES FOOD – NECTAR FOR HUMANS.

All-natural honey comes from honey bees. Many insects gather nectar from plants, but honey bees are the only ones who store it in a form suitable for human consumption. Bees collect nectar, or the sugary solution secreted by special glands (Nectaries) present in the flower blossoms, leaves and stems of flowering plants. Nectar is a thin fluid containing 50 to 60% water.

Honeybees suck the nectar out of the flowers and return to their hives. The worker bees present in the hives then suck the honey out of their stomach and churn the nectar for about half an hour. The chewing process introduces enzymes into the nectar, breaking them into simple sugars that are more digestible converting the nectar into honey that contains 16 to 18% water by the honey bees, stored and sealed in honeycombs of their hives to tide them over the lean patches during their life cycle. A colony of bees can collect and carry into their hive as much as 450 kg of nectar in a year. Bees achieve this by visiting some 2 million flowers to collect nectar putting a large amount of labor to produce honey a food source for their personal use. Ironically, humans eventually reap the benefits of their effort.

QUALITY TYPES

Honey sold in the open market as natural is more likely to be impure and adulterated with cheaper substitutes. Adulteration is rampant because of its demand and due to the fact that it is difficult to differentiate between pure honey and its impure varieties. The difficulty with honey quality is that the beekeeper does not have an absolute control over the variables encountered. Different species

Keemat: January – February 2021
of flowering plants have differing types and amounts of floral secretions.

Sometimes nectar from a single plant species may also differ due to differences in soil, climatic conditions, season and other environmental factors. Cambodia cotton honey during December and January months is reddish because of meagre nectar flow, but as the season advances the color changes to a rich, golden yellow color.

Honey bees are not very particular in collecting nectar from flowers alone. They gather sweet juices from any available source giving undue preference to attractive smell. Some plant species like cotton (Gossypium hirsutum) and castor beans (Ricinus species) also have glands secreting sweet liquids located outside the flower petals.

Alternative source of sweet juice for the bees is the excretion of some insects like plant lice, scale insects, leaf hoppers, white flies, tree hoppers, etc. which suck the juices of the various plant species. The unutilized plant juices excreted by these insects' deposits on leaves, stems of plants and sometimes also on the ground. Bees gather this sweet “honeyed” in a similar fashion as they gather honey. Honeydew honey is rich in starchy gums but is a poor food supplement for the bees during winter.

**HONEY AND ADULTERATION**

As discussed earlier testing the purity of honey is not easy. Various colors and different flavors only make the process more difficult. Some tips do help but it is safest to purchase supplies in sealed containers from reliable suppliers that conform to the standards laid down by the “Food Safety Act” & “FSSAI”.

In case of open purchase, if the honey is thin, has a weak flavor, and has a comparatively cheaper price, it is most likely to be impure and adulterated. One reliable test is to look for pieces of sealed or capped honey comb dipped in honey at the bottom of the container. Unscrupulous dishonest beekeepers however have found a way to get around this normally reliable test. Humans cannot make honey combs with capped cell, but filling empty combs with sugar syrup before or during the honey season and keeping it in the beehives by unscrupulous bee keepers is possible. Since the bees are busy during the season, they do not consume the syrup readily, but seal the comb nevertheless. Such sealed comb when present in the adulterated stuff lends it a deceptive look of fresh natural honey.

**IS THE HONEY GENUINE?**

Simpler test methods in deciding the quality of honey is by judging the color, taste and aroma. Lighter the color, milder the honey, although it starts darkening with age. Dark varieties especially those derived from barberry have good medicinal value. The consistency of honey is also very important in judging quality. Superior grades of honey are viscous in nature, having lower water content. Unripe honey contains high amounts of water along with yeast. High amounts of water in honey are favorable for yeast to ferment the sugars present to produce alcohol, carbon dioxide, acetic acid and water. Fermented honey becomes sour with a foamy layer on top.

A clean dry stick dipped in honey when burnt will give a typical sputtering sound similar to that of water when spilled on a pan of burning oil if it is having sugar or jaggery syrup as adulterants. A tea spoon of unadulterated honey mixes uniformly in a glass of water. When we take a tea spoon of honey and a pinch of lime on our palm and mix it produces heat. The heat generated during mixing is an indication on the genuinity of honey. Lesser the heat generated lesser the purity of honey tested.

**FSSAI Specification of Honey (2020)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific gravity</td>
<td>1.35 Min.</td>
</tr>
<tr>
<td>Moisture (%)</td>
<td>20 Max.</td>
</tr>
<tr>
<td>Total reducing sugars (%)</td>
<td>65 Min.</td>
</tr>
<tr>
<td>Sucrose (%)</td>
<td>5 Max.</td>
</tr>
<tr>
<td>F/G Ratio</td>
<td>0.95-1.50</td>
</tr>
<tr>
<td>Total Ash (%)</td>
<td>0.5 Max.</td>
</tr>
<tr>
<td>Acidity expressed as formic acid (%)</td>
<td>0.2 Max.</td>
</tr>
<tr>
<td>Free acidity milliequivalents acid/1000 g</td>
<td>50 Max.</td>
</tr>
<tr>
<td>Hydroxy Methyl Furural (HMF) mg/kg</td>
<td>80 Max.</td>
</tr>
<tr>
<td>Diastase activity, Schade units</td>
<td>3 Min.</td>
</tr>
<tr>
<td>Water insoluble matters (%)</td>
<td>0.1 Max.</td>
</tr>
<tr>
<td>Pollen &amp; plant matter count/g</td>
<td>5000 Min.</td>
</tr>
<tr>
<td>Proline, mg/kg</td>
<td>180 Min.</td>
</tr>
<tr>
<td>Electrical Conductivity mS/cm</td>
<td>0.8 Max.</td>
</tr>
<tr>
<td>C4 sugar (%)</td>
<td>7% Max.</td>
</tr>
<tr>
<td>$\Delta^{13}$C p-h (%o)</td>
<td>$\geq 1.0$</td>
</tr>
<tr>
<td>$\Delta^{13}$C Fru - Glu (%o)</td>
<td>$\pm 1.0$</td>
</tr>
<tr>
<td>$\Delta^{13}$C Max. (%o)</td>
<td>$\pm 2.1$</td>
</tr>
<tr>
<td>Foreign oligosaccharides (% peak area)</td>
<td>0.7</td>
</tr>
<tr>
<td>2-AFGP as specific marker for rice syrup (mg/kg)</td>
<td>Absent* (MRPL-1 mg/kg)</td>
</tr>
</tbody>
</table>

**Please note that Trace Marker for Rice syrup (TMR) and Nuclear Magnetic Resonance (NMR) profiling tests are not part of the current FSSAI standards. NMR is an advanced test to check for adulteration and confirmation of origin of honey.**

LoQ is limit of quantification. ‘ppbw’ is parts per billion by weight. MRPL is Maximum required performance level. $\Delta^{13}$C Max (%o) is Maximum difference between all measured $\Delta^{13}$C values; per mil. $\Delta^{13}$C p-h (%o) is the difference in $^{13}$C/ $^{12}$C between honey and its associated protein extract; per mil. $\Delta^{13}$C Fru-Glu (%o) is the difference in $^{13}$C/$^{12}$C ratio between fructose and glucose; per mil. Honey granulates and assumes a dark color. Homogeneous granulation is a sign of purity. One can restore to its sparkling liquid form by simply keeping the honey jar in a bowl containing warm water and stir until the crystals dissolve. Store honey at room temperature (Never in a refrigerator) and away from heat to prevent deterioration of its taste and for preserving its aroma and flavor. Honey obtained from the nectar of citrus, acacia, or linden flowers often have an unpleasant odor and so an unpleasant odor need not necessarily indicate adulteration.

When honey is, left standing in a container for a long time, then the heavy sugars components settle at the bottom. The lighter water laden portion that rises on the top tends to ferment giving out an unpleasant odor. To prevent this from happening it is advisable to stir, stored honey intermittently. Honey stirred frequently and stored properly will remain odorless and consumable for a very long time. Store honey preferably in glass containers. Avoid metal containers and covers as honey tends to react with metals producing dark impurities.

Beekeepers cannot direct the bees to specific flowers to collect nectar, however their experience aid them to identify the plants from where bees gather nectar and so decide the varieties. Moreover, the honey obtained has a fruity aroma of the predominant flower species from where the bee collects the nectar.
TYPICAL TYPES OF HONEY

1. **Comb honey:** is honey in the absolute natural form. Honey filled in beeswax comb as stored by the bees in the honey comb. It is the only unprocessed form of honey.

2. **Liquid honey or Extracted honey:** When we cut off the natural wax caps and the comb and centrifuge it in a honey extractor forces out the honey stored in the comb and we get liquid honey.

3. **Granulated creamy honey:** Mixing one part pure finely granulated honey with nine parts of liquid honey and storing it at around 57 degrees centigrade until it becomes firm and creamy.

4. **Chunk Honey:** Comb honey surrounded by liquid honey and stored in a jar is chunk honey.

Although we can use honey in its unprocessed form straight as available from bees, processing improves its keeping quality. Unprocessed honey has better taste but is susceptible to fermentation due to the presence of yeast. Honey processing takes place generally at a temperature above 160 degree centigrade. Processing and filtration reduce its natural tendency to granulate and improves its looks. However high temperature processing and filtration eliminates natural enzymes present.

CAN HONEY BE POISONOUS?

Pure honey is ambrosial however some can also be downright poisonous. Indiscriminate collection of nectar from poisonous plant species can make the honey gathered poisonous and unfit for human consumption. Plants like Mountain laurel (Kalmia latifolia), Tobacco (Nicotiana tobecum), Yellow jasmine (Gelsemium simper virens), Soapberry (Sapindus marginatus) and Rhododendron species, produce poisonous nectar.

Honey obtained from central and northern Japan often causes indisposition and minor illness to heat it at 46 degrees centigrade under low pressure (67 mm Hg). This prolonged but controlled heating can breakdown the poisonous substances and make the honey harmless keeping the flavor intact.

However, the point to note is the toxins in such heady honeys are not stable. The toxicity can decrease as the honey ages over time even under ordinary storage conditions.

CONCLUSION

Lord Shri. Krishna in the “Bhagavat Gita” states that “We are what we eat” and urges us to eat only “Yukta Saatvik Aahaar”, i.e., eat sensibly, simple, pure and healthy food.

What food one eats, so will one produce.
- Chanakya.

Morden research has revealed that honey has the necessary qualities to be classified as a health food. Regular consumption of honey provides a wide array of vitamins, minerals, and natural antioxidants protecting skin from damage and destruction.

In addition, honey continues to be an easily available beauty product for external application with a sure potential to become the basic raw material for scientific research in the creation of speciality ingredients for cosmetic preparations.

Did I hear someone say? Wow! “Honey, you are looking beautiful”.

<table>
<thead>
<tr>
<th>COLOUR OF HONEY</th>
<th>PLANT</th>
<th>BOTANICAL NAME</th>
<th>TIME OF FLOWERING</th>
<th>AROMA</th>
</tr>
</thead>
<tbody>
<tr>
<td>WATERY WHITE</td>
<td>Acacia</td>
<td>Acacia sp</td>
<td>October</td>
<td>Fine</td>
</tr>
<tr>
<td></td>
<td>Shain</td>
<td>Plectranthus rugosus</td>
<td>August to October</td>
<td>Mild</td>
</tr>
<tr>
<td></td>
<td>White clover</td>
<td>Trifolium alexandrium</td>
<td>May to June</td>
<td>Excellent</td>
</tr>
<tr>
<td></td>
<td>Raspberry</td>
<td>Rubus idasus</td>
<td>April to July</td>
<td>Pleasant</td>
</tr>
<tr>
<td></td>
<td>Toon</td>
<td>Cedrela toona</td>
<td>March to April</td>
<td>Distinct</td>
</tr>
<tr>
<td></td>
<td>Cotton</td>
<td>Gossypium sp.</td>
<td>August to September</td>
<td>Mild</td>
</tr>
<tr>
<td></td>
<td>Lavender</td>
<td>Lavandula vera</td>
<td>Spring</td>
<td>Delicate</td>
</tr>
<tr>
<td></td>
<td>Sage</td>
<td>Salvia officinale</td>
<td>April to July</td>
<td>Astringent</td>
</tr>
<tr>
<td></td>
<td>Sunflower</td>
<td>Helianthus annus</td>
<td>September</td>
<td>Sharp</td>
</tr>
<tr>
<td>LIGHT GOLDEN</td>
<td>Soapnut</td>
<td>Sapindus detersgens</td>
<td>April to May</td>
<td>Excellent</td>
</tr>
<tr>
<td></td>
<td>Dandelion</td>
<td>Taraxacum officinale</td>
<td>April</td>
<td>Pleasant</td>
</tr>
<tr>
<td></td>
<td>Maple</td>
<td>Acer platenoides</td>
<td>Spring</td>
<td>Pleasant</td>
</tr>
<tr>
<td></td>
<td>Eucalyptus</td>
<td>Eucalyptus sp.</td>
<td>November to April</td>
<td>Strong</td>
</tr>
<tr>
<td></td>
<td>Peppermint</td>
<td>Mentha piperita</td>
<td>Perennial</td>
<td>Pleasant</td>
</tr>
<tr>
<td>AMBER</td>
<td>Shisham</td>
<td>Dalbergia sp.</td>
<td>March to April</td>
<td>Characteristic</td>
</tr>
<tr>
<td></td>
<td>Shisham</td>
<td>Dubia sp.</td>
<td>April</td>
<td>Pungent</td>
</tr>
<tr>
<td></td>
<td>Arjan</td>
<td>Terminalia arguna</td>
<td>May to June</td>
<td>Molasses</td>
</tr>
<tr>
<td>DEEP RED</td>
<td>Barberry</td>
<td>Berberis lyculium</td>
<td>February to June</td>
<td>Strong</td>
</tr>
<tr>
<td></td>
<td>Buckwheat</td>
<td>Fagopyrum esculentum</td>
<td>June to September</td>
<td>Strong</td>
</tr>
<tr>
<td></td>
<td>Phacelia</td>
<td>Phacelia tanacetifolia</td>
<td>Perennial</td>
<td>Pleasant</td>
</tr>
<tr>
<td>LIGHT GREEN</td>
<td>Willow herb</td>
<td>Chaemaerion angustifolium</td>
<td>July to February</td>
<td>Delicate</td>
</tr>
<tr>
<td></td>
<td>Sweet clover</td>
<td>Melilotus alba</td>
<td>June to September</td>
<td>Strong</td>
</tr>
<tr>
<td>BLACKISH</td>
<td>Honey dew</td>
<td>Through insects and leaf hoppers</td>
<td>May to June</td>
<td>Unpleasant</td>
</tr>
</tbody>
</table>
A minister gave a talk to the Lions Club on sex. Getting home, he couldn’t tell his wife what he had spoken, so he said he had discussed horseback riding. A few days later, she met some club members and they complimented her on the brilliant speech her husband had made. She said, “Yes, I was surprised about the subject matter, as he’s only tried it twice. The first time he got so sore he could hardly walk, and the second time he fell off!”
Nelson Mandela said that education is the most powerful weapon which you can use to change the world. The Sedibus (Malaxmi Group) in Association with the Institution of Engineers (India), Vijayawada, A.P. organized Late Yarlagadda Sreeramulu 17th Endowment Lecture in a virtual webinar format on 23rd November 2020. Ms. Deepa anchored the presentation followed by Q/A. Ms. Mahima Datla, Managing Director, Biological Evans Ltd, Hyderabad delivered the maiden lecture on the above topic. She holds a graduate degree in Business Administration Management from Webster University, London and has been working with the company for over 20 years in various capacities. In 1964, Evans Medicals, a U.K based Pharma Company acquired 40% stake in BEL. Mahima said that unfortunately, over the past few months, the world has been facing an unprecedented pandemic and coronavirus spreading exponentially, economies tumbling, shrinking societies in turmoil. Excerpts follow:

**How a vaccine works?** Vaccines replicate nature. When we encounter a virus or bacteria, our immune system is designed to fight it off. We are not able to control the load of virus as in the case of COVID because new system hasn’t seen enough to be able to evolve in which it can fight these pathogens. That is where vaccines come in. By giving a vaccine, we take it in a purifying state a small quantity of either the virus or bacteria and administer the same to an individual. Our immune system recognizes the antigen. When you first encounter a pathogen, you will get immediate response, body creates memory cells against virus keeping throughout lifetime.

**Vaccination strategies:** Major types of vaccines

- Live attenuated vaccine for instance oral OPD drops polio vaccine.
- Inactivated/killed vaccine Take cold corona virus and weaken it or kill by either heat or through chemical means e.g., Bharat Biotech developing COVID vaccine activated.
- Subunit vaccine (spike protein). Take either a protein or part of protein e.g., Hepatitis B vaccine. One of the COVID candidates, they are developing with Baylor College of Medicine, Houston is subunit vaccine. Corona virus has spikes around it (looks like the sun). Spike protein has a particular path to fit which is called reflector bike in domain and that goes and attaches itself to the 2 receptors and that becomes entry point of the virus into our body. The vaccine they are developing is to prevent that attachment and to give body antibody receptor binding domain portion.
- Vital vector vaccines: Like Oxford; AstraZeneca, the ones that Serum Institute is developing. A live vector vaccine uses chemically weakened virus to transport pieces of the pathogen to stimulate immune response. Take the protein and even in Johnson and Johnson Sputnik V, express it on known bio risk and in this case, adenoviruses (complicated and tricky but when stuck it gives common col). Some use adenovirus 5, Virus J&J Ad26. These types of vaccines are taken on protein and express on virus vector.
- DNA and mRNA vaccines: Technology is transformative, and it would not have been easy to license a product but for COVID and Pfizer and Moderna vaccines are getting developed now.

**Vaccine pathway:** Summarizes what happens from discovery to launch a vaccine.

- Proof of concept, early-stage discovery where we select antigen (protein receptor binder) and adjuvant (aluminum phosphate or hydroxide), CpG 1018/Dynavax in the case of COVID since proteins are hard for your body to recognize and immune system to accept. It helps the body to recognize the protein quickly and then gives high immune response and more persistent (long lasting). In the early stages, it is selection of antigen and adjuvant and demonstrating immunogenicity which means that you take a subject which never seen the bacteria or virus and then inject with a vaccine and 28 days later see the antibody response.
- Animal toxicity studies before human beings for product safety/dose matrix and in case of corona virus using hamsters (rodents) to prove that vaccine works.
- Clinical development in 3 phases - Phase I for Safety & Immunogenicity. Assess the product in adults (infants are last).
- Phase II: Selecting the dose – Amount of antigen that one needs to go into the virus. The lowest amount of either protein virus or bacteria and highest immune response. It is a balance between Safety & Immunogenicity for all age groups efficacy.
- Phase III: Large scale studies to show the actual effectiveness of the vaccine since efficacy of vaccine is challenging and they are doing 30,000-60,000 people studies. If the size was 100 people, 50 receive vaccine and 50 receive placebo (do not receive vaccine). Nobody knows who received vaccine or placebo and at a certain point they unwind the study and see who was vaccinated and those who did not receive are the ones with the highest number of chases.
- Marketing Authorization and Launch: Review clinical data and manufacturing process data. Scaling up the product and manufacturing technologies applicable and apply for licensor to the country.
- Process development and validation: Clinical manufacturing, process - scale up, product consistency and characterization and facility inspections.

**Coronavirus vaccine perspective:** Individuals regardless of socio-economic status are limited to houses, having been forced to give up their daily activities. Earlier, we did not even know if a vaccine works. But now we know vaccine works and it is a matter of time before these interventions become available. In the wake of Pfizer, Moderna (BioNTech) and Astra-Zeneca vaccine announcing successful results and of late Oxford vaccine (90% efficacy) in UK. It is skeptical about things getting back to normal. We still do not know how effective these vaccines would be across all age groups, efficacious in the elderly as well as young and adolescent children. Because of the fast-track regulatory approvals, we have no data and the kind of long-term immune response. In the vaccine parlance, they call this persistence, we don’t know if the immunity lasts for 6 months or one year, need a vaccine every year, once in 5 years, does it confer long term protection. In the case of COVID, we have no data to know what the long-term immunity will be, and it is not pessimistic or negative. She is excited about RNA vaccine, but they never had mRNA vaccine. We do not know long-term implications of tinkering with DNA and RNA. We don’t know how long the immunity lasts and if the booster is important.

**Challenge of scale:** About 7.88 billion people need 16 billion doses notwithstanding distribution, sales, or wastages. Across all vaccines, technologies on the platform, the annual current manufacturing capacity in the world is only about 8 billion doses, despite COVID, children are still being born, need to be protected and measles is 10 times more infectious than COVID and fatal for children. You need to create double what the world has done so far to date. It takes a couple of years and hundreds of crores of investment to have manufacturing facilities that needs compliance and WHO prequalification. Manufacturing these existing vaccines and millions of deaths annually to deadly diseases like measles largely eradicated polio cannot be stopped to make way for coronavirus vaccine. Indian manufacturers like Serum Institute of India, Bioparticle are ready to roll out bins of doses for this vaccine in the coming years. Vaccine industry is one of the few fields where India can be proudly claimed to be the world’s leader in the context of China and supply between 15-70% UNICEF’s requirement. It is important to understand that nothing on scale of the vaccination plant for COVID has ever been attempted before. We never needed to vaccinate entire populations of countries in one go. The challenge is related to logistics, supply chain and delivery ensuring the availability and sufficient training of health workers to even administer vaccine. These are present challenges and things will only get complicated depending on the type of col chain that we need for recording and chatting people for the follow up of those, given this vaccine. We managed to follow up for children but again India’s cobalt is 27 million children being born and at the most administering 75 million doses to children assuming 3 days schedule every year we have been able to track and chase and make sure they get second dose but the scale of this is not even comparable.

**Pandemic situation:** Number of leading COVID 19 vaccines including that of Pfizer and Moderna (mRNA-1273) need to be stored at -17°C from the moment they are bottled up till the time they are injected into our arms. It is left to one’s imagination on the practicality and feasibility of using such vaccines particularly in developing countries including India viz. lack of -17°C coaching and distribution. That is another challenge we have to overcome. With nearly 250 COVID vaccines under development and WHO reporting they were like 45 in clinical trials, it might seem there is a mad race for vaccines and seems to be bilateral agreements with manufacturers, frenzy for countries to be going as well. It is going to create wait amongst individuals and one wonders as well as government which vaccine would be first in the market. It is a difficult question to answer without having all the clinical information present. Certain vaccine would be preferable for the elderly to work better. We are not at a place where we land on one technology platform and we have multiple technology platforms relatively successful and people using more than one different type of vaccine or technology.

The other thing to bear in mind is because of the fast-track regulatory approvals incomprehensible from time of development to licensor, how quickly it forms short cut in testing for vaccine safety and efficacy endanger millions of lives in a short-term. We cannot afford to take short cut and they are working on evidence-based decisions. In some countries viz. US, political climate is hot that people are forced to create expectations that cannot be met. Mahima said they cannot compromise lives of millions of people in short-term, and in the long-term, they are damaging public confidence in vaccines and in science it is irresponsible thing to do. Most teenage groups are not rushing and not creating the unrealistic expectations. It is to be understood that unlike therapies, vaccines are given to perfectly healthy individuals. Availability to manufacture and plan for an equitable distribution so that not just the wealthy receive the vaccine, but everybody receives it. Government to consider affordability and the challenges around. A case in point Pfizer despite being first to market because of the bilateral deals and the pricing strategy and the fact that the vaccine has to be at -17°C would mean a common man or average citizen of our country is not able to afford to buy the vaccine and secondly country is not able to subsidize and buy on behalf of 3 billion people. Therefore, government is still relying on Oxford-Zeneca and Marek’s vaccines to be licensed very quickly and not creating an expectation around Pfizer or Moderna vaccines.

**Economies rationale:** With the advent of vaccines, global health may be back to normal, which will be in a couple of years. It is important for individuals, institutions, and company bodies to recognized the poor. Socio-economic impact has been catastrophic to see the needs and it would take sustained collective efforts to read those. On the health side, Gates Foundation reported that 25 years wiped out in 25 weeks of COVID pandemic sets the world back decades. Early days of shut down and immunization is community based, Asha workers administer vaccine, and they were prevented from doing that. Consequently, one in three children are receiving vaccine today. Economic consequences are going to be more lasting than vaccine is going to be able to solve it. Despite these efforts livelihood of many may not be completely restored, going bankrupt and many continue layoffs. Unlike wealthier
nations there is no social security for small businesses, and these are testing times and a pressing challenge. Most vulnerable are elderly people, low beach workers, small businesses etc. It is imperative these efforts continue to bring more equal and inclusive economies in the long run. They are more resilient in the face of these types of challenges because we are not able to predict when the next pandemic will come with climate change and other things. People are resilient and encroaching environments that we never used to before because we are becoming densely populated, eating exotic things we should not be eating e.g., bats and who knows if this pandemic will become a 10-year event or 100 years. This serves as a wakeup call and it is our responsibility as individuals, partners of society to be watchful and proactive, wear masks, wash hands, recognize society at large at time like this. Vaccines are going to be powerful tools and intervention to stop this.

**Question – Answer:** Mahima fielded the questions with comprehensive answers, clarified doubts and offered advice.

**How long blue cell immunity last through vaccination?**

We don’t know. Most of the vaccine’s efficacy studies are being conducted or following patients at regular intervals (2 months - one year after vaccination) and that data becomes available, we know how long antibodies last.

**Is there a chance of the virus to recur in future?**

For the same virus once we start immunizing people and enough people are immunized, there is good likelihood of herd immunity. If 60-80% people are immunized, then you create this phenomenon because we stop transmission and release go down the virus. If that happens and sufficient people are immunized, then this virus will not recur. Nonsense sequences wherever we have changed the sequence of the virus, it is not in a manner to impart immunogenicity. If it rotates enough and our immunity system do not to recognize it, we may have to reengineer the vaccine for it to be effective against that sequence.

**Russia has developed first COVID vaccine. Are we in competition and going in a short cut in the process?**

Chinese were most ahead in creating the vaccine because they gave information with respect to vaccine, they have published sequences and released them globally. They assist DNA sequence of the Coronavirus. Russia claims to have first vaccine, but the profile is a placebo control. They gave people a product and are doing clinical trials. Obviously, countries who get the vaccine first are going to use it for their citizens first like the US. They will be hard pressed to immunize every single citizen of the country before they give their vaccine to someone else. It means their economy will come back online or start recovering this illness. It is not a race but there is need for at least 5-7 large scale manufacturers to be able to address this pandemic.

**Antibodies collected from patients who have recovered from COVID to make the vaccine.**

Antibodies cannot be given as vaccine and for that we need antigen. It is the result of giving a vaccine which mimics what happens when you get the disease. People who are convalescent or recover from COVID, develop antibodies and there has been attempts to take them and inject into people who have COVID with the aim of neutralizing the virus which normally happens e.g., if a person get bitten by a snake, antibodies of the horses of that particular snake are given so it is neutralized and survived. Plasma therapy of taking one’s antibodies and injecting into COVID positive patient is not that works because you cannot give antibody without knowing how much antibody you are giving. People are giving plasma without titrating the actual number of antibodies in it. Monoclonal antibodies are showing promise and Eli Lilly Monoclonal antibodies has been approved for emergency license to be a therapeutic pure COVID to prevent COVID.

**Various brands of different origin are working on war footing to come out with vaccines, how does a layman make the right choice for the COVID?**

Vaccines that are licensed effectively already known to be safe and immunogenic otherwise the company would not even be given license. There will be relative differences between the vaccines once they are licensed, all of them considered safe and immunogenic. Depending upon clinical data, some vaccines may be better suited for adults, some for elderly. Infants, children and senior citizens and their immune systems are difficult to get immune responses, behave differently than healthier adults. Once the clinical details are available companies themselves speak about side effects like fever or headache and are not going to be the decision drivers for the vaccine. We may not have many choices at least in the near future. Our choice is limited but rests safe and knowledgeable. Once it is licensed, thoroughly reviewed for safety and immunogenic.

**We can’t be sure about how long the immunity will last from the vaccine. Can we expect herd immunity?**

Data will become available. Companies are following patients for a much longer period in a time frame (6 and 9 months), they will draw blood from patient’s vaccines and check the antibody levels. If the levels having dropped and not seen reinfection cases coming up, it is safe to say that longer lasting protection. Just because we didn’t have time to see that we don’t know the answer. Not to say we won’t know the answer over the next year. They certainly know how long the vaccines will last.

**What is the status of the vaccine candidate being tried by BEL and when can we expect you to come up with encouraging clinical trials and vaccine?**

They just began Phase I & II combine study because they wanted to directly evaluate 4 different formulations depending upon antigen strength and this data is expected to be available by the end of January 2021 and then proceed directly to Phase III study and dose finding study would have finished and the last study is expected 30,000 people and hopefully by June-July 2021, license the vaccine and certainly by February they will have preliminary immunogenic data from 400 people that they are dosing. In addition, they have manufacturing partnership with Johnson & Johnson for their vaccine, which is currently under Phase III study and if it is effective that should be available next year.

**Children have not been a part of testing of the vaccine**

One doesn’t know why children are least important for corona virus. Some may be better in certain age groups and others may have better safety profile. Children are part of majority of clinical studies and the major age groups that most companies have been trying is upwards of 16, 18 to the ages of 65 and some have specifically included over 65 because they are focusing on risk. Regulators and companies would want them to evaluate younger birth profile and continue evaluating even for children going forward.

**Future challenges once the COVID has come through?**

Most of them are related to logistics and distribution. We do not have infrastructure where we can reach adults and elderly. We don’t have enough healthcare workers and even know how to give an injection and to be able to give vaccine. The choice of vaccine will have to increase virtual infrastructure, but that problem can be solved through money when they come back for the second dose carefully protected. These are generic logistic issues with delivering vaccines once it is licensed besides be able to scale manufacturing; make billions of doses, it has never been done is going to be a huge manufacturing challenge.

**WHO solidarity trade and USFDA approved its views recently. How do we reconcile this kind of contradictions that bodies make?**
Countries are sovereign and can choose to make regulatory decisions. WHO acts as advocacy body, and a facilitator, but they are not a regulator? Each country may or may not take WHO condense and go their own path when it comes to regulatory decisions. Devastations in USA, 2000 people dying daily was a tremendous pressure. People are being forced to looking at modern era based other antiviral agencies. Antibodies are showing promise and once they are scaled, the confusion on other antivirals will go away, they will become the primary line of treatment for people who already have COVID and vaccines for prevention.

What are the practical difficulties in administering vaccines since apparently low temperature is preventing from production to administration?
The difficulty is the logistics of storage, but the actual administering vaccines are enough healthcare workers. Those are challenges for countries of populace such as ours and there is already dearth of health professionals. -17 will not be a challenge for US who have routinely immunized few adults and elderly. They already have mechanism and logistics figured out, track and trace are not a problem. The other thing is enough syringes and glass vials to fill the product which are solvable challenges.

Is there any data about social climate affected by virus?
Mahima is not familiar whether such data exist or not and if you retrospectively look, obviously people with lack of access to healthcare would have been most impacted.

What policy measures are required from the government to further boost the industry because there is uncertainty prevailing upon?
They will not. For vaccine of any type, funding like push and pull mechanisms, Push mechanism gave money for R&D e.g., Gate Foundation grant to develop vaccine, pull mechanism are on demand side e.g. Government is not giving money but contract for 100 million doses of vaccine. In our country, push mechanism being done by Department of Biotechnology who support certain companies in terms of giving funding for clinical development and they are also funding clinical trial centers. Pandemics require investment like insurance. You cannot predict it, but you need manufacturing facilities. It is a challenge for government to make the investments in such kind of infrastructure that can be deployed whenever a pandemic comes. Regarding policy, government aid the companies are ready to buy, 300 million doses next year and 500 million the following year and manufacturers incentivized to solve the public health problem. Address manufacturing is to start producing vaccine before they get license. It is helpful, if they know the government decided to buy the said doses, they can work backwards and how soon they need to start manufacturing and it would give them confidence to buy the raw materials, packaging materials etc. and start producing ahead of our times. These interventions are needed and the government is working hard with constant engagement with industry and everything related from regulatory issues to logistical issues and figure out budgetary implications of deploying immunization at a large scale because it is not just vaccine but whole chain of administration, track and trace.

Why Pfizer vaccine needs to be stored at temperature -17°C?
Full technical details are not known. The RNA and related particles which are formulation that is needed for RNA to be stable for the body to recognize. The formulation is currently unstable and is only stable at -17°C. The companies are looking at alternative formulations, they just haven’t had the time to take those formulations to clinic and time to develop them. They are trying to freeze drying the product when it becomes like a cake and reconstitute it with injection at the time of giving and that may reduce need for -17°C.

A woman found herself standing at the Pearly Gates. St. Peter greeted her and said, “These are the Gates to Heaven, my dear. But you must do one more thing before you can enter.”
The woman was excited, and asked of St. Peter what she must do.
“Any word,” answered St. Peter. “It’s your choice.”
The woman promptly replied, “Then I will spell love. L-O-V-E.”
St. Peter welcomed her in, and asked her if she would mind taking his place at the gates for a few minutes while he took a break. So, the woman is left sitting in St. Peter’s chair when a man approaches the gates, and she realizes it is her husband.
“What happened?” she cried, “Why are you here?”
Her husband stared at her for a moment, then said, “I was so upset when I left your funeral, I got in an accident. Did I really make it to Heaven?”
“No yet,” she replied, “You must spell a word first.”
“What word?” he asked.
The woman responded, “Czechoslovakia.”

***

John asks his wife, Mary what she wants to celebrate their 40th wedding anniversary, “Would you like a new mink coat?” he asks.
“Not really,” says Mary.
“Well how about a new Mercedes sports car?” says John.
“No,” she responds.
“Would some beautiful new jewelry do the trick?” he asks, becoming slightly exasperated.
“Nah...” she shrugs.
“What about a new vacation home in the country?” he persists. She again rejects his offer with a “No thanks.”
“Well, what WOULD you like?” John asks.
“I want a divorce.” answers Mary.
Sorry,” John sighed. “I wasn’t planning on spending that much.”

A preacher went to his church office on Monday morning and discovered a dead mule (jackass to the knowing) in the churchyard. He called the police. Since there did not appear to be any foul play, the police referred the preacher to the health department.
They said since there was no health threat that he should call the sanitation department.
The sanitation manager said he could not pick up the mule without authorization from the mayor.
Now, the preacher knew the mayor, and was not too eager to call him. The mayor had a bad temper and was generally hard to deal with, but the preacher called him anyway.
The mayor did not disappoint. He immediately began to rant and rave at the pastor and finally said, “Why did you call me anyway? Isn’t it your job to bury the dead?”
The preacher asked the Lord to direct his response. He said: “Yes, Mayor, it is my job to bury the dead, but I always like to notify the next of kin first!”

***

At Friday night services, Morris went to his friend Irving and said, “I need a favor. I’m sleeping with the Rabbi’s wife. Can you hold him in synagogue for an hour after services for me?”
Irving was not very fond of the idea, but being Morris’ lifelong friend, he reluctantly agreed.
After services, he struck up a conversation with the Rabbi, asking him all sorts of stupid questions – just to keep him occupied.
After some time, the wise Rabbi became suspicious and asked, “Irving what are you really up to?”
Irving, filled with feelings of guilt and remorse confessed to the Rabbi, “I’m sorry, Rabbi. My friend is sleeping with your wife right now, so he asked me to keep you occupied.”
The Rabbi smiled, put a brotherly hand on Irving’s shoulder and said, “You’d better hurry home, Irving. My wife died two years ago!
**Why is there salt in the ocean?**

Salt dissolves easily in water. Water in the oceans evaporates as water vapor that rises and cools until it falls as rain into the air, leaving solids like salt behind in the ocean. The nearly pure water in the rain that falls on land, also dissolves some dirt along. Rain that also dissolves carbon dioxide in it is slightly acidic, further helping to dissolve the dirt that is mostly silica (about 15%). Dissolved solids in river water are also silica or silicon dioxide. Glass and quartz are also silica.

However, Gypsum (calcium sulfate), for example, and chalk (calcium carbonate), each dissolve in slightly acidic water, adding calcium, sulfate, carbonate, and bicarbonate ions to the water, dissolve more easily than silica. Sodium and chloride ions are even more soluble.

Much more of the other ions are present in dirt than there is salt. The solids in river water are mostly bicarbonate ions (from the carbon dioxide in the air), calcium, silica, sulfate, chloride, sodium, and magnesium, in that order.

When the river water gets to the sea, the organisms in the ocean remove ions from the water to build their shells. Diatoms in plankton remove silica. Other plankton and shellfish remove calcium and bicarbonate ions to make shells and coral reefs.

As the water evaporates and concentrates the ions, the less soluble ones like Calcium carbonate, calcium sulfate, and magnesium sulfate form deposits on the sea floor precipitate and fall to the bottom of the ocean.

No living organism builds its house out of salt, and only a small amount of salt is present in the mud. Therefore, ocean water ends up being mostly salt water, with a number of other molecules in it, but in much smaller amounts.

**Why do some chemicals stain our hands?**

Sometimes it is just because they are colored chemicals. If we rub our hands in food coloring, on grass, or on wet paint, the molecules on these things that make absorb light are, left on our hands.

Some molecules are better at sticking to skin than others. We can rub our hands in dark yellow egg yolk, but the dark substance is easy to wipe off with a paper towel and does not leave a stain. The molecules that make egg yolk yellow are large and do not attach themselves to the skin.

Food coloring, on the other hand, are very small molecules that can get into the very small crevices and pores in the skin, and they can even react with the skin itself, forming chemical bonds that make them stick tightly there. To wash them off, we need lots of water to help them dissolve and carry it away, but we may also need to scrub off the top layer of dead skin cells to which the dye has bonded.

Some chemicals react with the skin and change its color. Skin can burn or bleach with strong oxidizers. Some other chemicals react with the skin and themselves change color.

Potassium permanganate (KmO₄) will oxidize (burn) the skin and make manganese dioxide, which stains the skin brown. Silver nitrate will react with the skin and the salt on the skin to form silver chloride, which will then break down in strong light to form tiny particles of silver. These silver particles stay stuck in the skin and look black.

As the skin grows and the cells die and scrub off, and the stain gradually goes away. Nitric acid reacts with (burns) the skin, creating a yellow or brown stain. It is particularly dangerous because the nerves in the skin do not react to it, so we may not even realize it.

---

**What happens when we put our hand in an acid?**

All will depend on the acid and its dilution. There are strong and weak acids, oxidizing acids and non-oxidizing acids. In general, skin reacts to strong acids and oxidizing acids. People handle weak acids all the time. Carbonated water is a weak acid. So is the citric acid that makes orange juice taste sour.

Some weak acids, like the acetic acid in vinegar, can attack skin if concentrated. Strong acids, like hydrochloric acid, do not react much with skin if dilute. Our stomach produces hydrochloric acid, and the lining of the stomach protects it by a layer of mucus. Even so, the hydrochloric acid in the stomach is often less acidic than the typical carbonated beverage, because it is dilute due to water.

Concentrated strong acids and diluted oxidizing acids can burn skin. The acids react with the proteins in skin and break them down, so they can no longer act as a barrier. The acid can then continue to react with tissues, killing cells. Living tissue can only function within a narrow range of acidity, and outside of that range the cells die.

Sulfuric acid is not only a strong acid, but it reacts with the water in our skin so strongly creating blisters, because of its dehydrating ability.

We can protect our hands from strong acids by wearing gloves made of materials the acid cannot attack. With many acids the fumes are also dangerous, as so we should also make sure to have plenty of ventilation as the fumes can attack the lining of our nose, throat, and lungs, as well as our eyes and we should always wear eye protection when working with acids and bases.

---

*No one in this world is without enemies. However, the one who manifests generosity and affability will be surrounded by numerous friends and relatives* - Thirukkural
Jokes are meant for amusement! It employs comedic vehicles like parody, satire, other material referencing, true people, organizations, religions, regions, country, sexuality, etc., making fun of them in ways that are obviously not true. Some jokes might be offensive to some readers as every individual’s sense of humor is different. Our intent is not to offend or cause damage to anyone reading or understanding these jokes. If you trust that jokes could offend you, please do not read them! Despite this warning, if on reading you find, the jokes not to your liking, ignore and move on! Please be aware that they are simply just JOKES!

There once were two friends, very successful thieves having a knack for finding unguarded entries to rich houses and robbing them of their gold. One day they decide to offer some part of the gold they rob to the poor to wash away their wrongdoings, but could not decide how much of each of their loot to offer.

The first one thinks for a minute, then draws a footlong circle on the floor. He lifts his face up and says, “Oh Lord, I’ll throw all my loot into the air, whatever lands inside the circle is yours and what little is left outside I’ll keep for myself”. Saying this he throws all his loot up in the air. As it comes down almost all the gold fall outside the circle except for few coins. He praises the Lord for his generosity and collects his share smiling.

The second one thinks hard and let out a deep sigh says, “God the Greatest! I will not make you pick up your share from the floor like my friend. I will throw up all my loot towards you in the heavens. Please keep whatever you want and just throw back on to this earth whatever you think I deserve”.

An old man, a school boy, a lawyer, a doctor, and a community service worker are all on a plane with only four parachutes when the pilot of the plane has a stroke and passes away. As the plane plummets its passengers to death, the five members of the aircraft argue over who deserve the four bags containing the parachutes.

Lawyer: “I deserve to live because I advocate for my clients through my sharp wit and massive knowledge.”

The lawyer grabs the second bag and plummets out of the aircraft.

Social Worker: “I deserve to live because I protect vulnerable children and support families in need of assistance.”

The Social Worker grabs the nearest bag and plummets out of the aircraft.

Doctor: “I deserve to live because I help diagnose ill people with my specialized training.”

The doctor grabs the third bag and plummets out of the aircraft.

This leaves only the school boy and the old man in the plane with it descending toward the ground.

Old man: “Go ahead boy. Take the last parachute. You have many years ahead of you while I am just an old man who doesn’t have as many years left.”

School boy: “Don’t worry, we can both take a parachute. Look, there are still two left.”

The old man’s just stares in shock. “Wha...what... but those three...”

School boy: “Remember the supreme court lawyer with the sharp wit and massive knowledge? He took my school backpack.”

A U.S. Marine Colonel was about to start the morning briefing to his staff. While waiting for the coffee machine to finish its brewing, he decided to pose a question to all assembled. He explained that his wife had been a bit frisky the night before and he failed to get his usual amount of sound sleep. He posed the question of just how much of sex was “work” and how much of it was “pleasure?”

A Major chimed in with 25-75% in favor of work.

A Captain said it was 50-50%.

A lieutenant responded with 25-75% in favor of pleasure, depending upon his state of inebriation at the time.

There being no consensus, the colonel turned to PFC (Private First Class) who oversaw making the coffee. What was HIS opinion? Without hesitation, the young PFC said, “Sir, it is 100% pleasure.”

The colonel was surprised and asked why.

“Well, Sir, if there was any work involved, the officers would have me doing it for them.”

In the 1st year of marriage, the man speaks and woman listens.

In the 2nd year, the woman speaks and the man listens.

In the 3rd year, they both speak and neighbors listen.

A merchant captain and several of his officers were returning to the ship after a big evening ashore. As they climbed the gangway the captain threw up all over himself. Pointing to an apprentice seaman above him he shouted, “Give that man 5 days in the brig for vomiting!”

The following morning the captain was checking the log and saw that the young seaman had been sentenced to 10 days and asked the chief mate why.

“Well Sir, when we got you undressed, we found that he had also soiled your pants.”

A guy goes into a bar and orders a beer.

The Bartender says “that’ll be a dollar”.

The guy thinks “that’s cheap” but the beer turns to be delicious, so he finishes his beer and decides to take a chance.

“Bartender, I’ll have your finest wine.”

The bartender goes through a long process of showing the bottle, opening it, aerating the wine, and pouring it into a nice glass before saying that it’ll be 50 cents.

The guy can’t believe it, so he thinks “screw it” and says “I’ll have a whole bottle of your best scotch.”

The bartender hands it to him and says “here, on the house”. Curiosity finally gets the better of the guy so he asks “OK, where’s the owner?”

The bartender replies “upstairs with my wife”.

The guy asks “what’s he doing upstairs with your wife?”

The bartender looks the man in the eye and replies “the same thing that I’m doing to his business”.

A blonde was standing in front of a soda machine outside of a local store. After putting in sixty cents, a root beer pops out of the machine. She sets it on the ground, puts sixty more cents into the machine, and pushes another button. A coke comes out the machine! She continued to do this until a man walking to use the machine became impatient. “Excuse me, can I get my soda and then you can go back to whatever stupid thing you are doing?”

The blonde turns around and says, “Yeah right! I’m not giving up this machine while I’m still winning!”

A. J. C. Y. Morse

SANTA was brought to court on charges of drunken driving.

Just before trial there was a commotion in court. The judge pounded the gravel on his table and shouted, “Order! Order!”

Santa responded, “Thank you, your honor! I’ll have a scotch and soda with some nuts and potato chips.”

TEACHER: One day our country India will be corruption free. What tense is that?

Student: Future impossible tense……………

Keemat: January – February 2021
Consumer’s Word Search! (Word clues are below)

Abated  Balladist  Comedy  Drama  Germ  Lament  Munch  Rotgut  Tadpole
Accurately  Ballets  Commingling  Dreamy  Gridiron  Landings  Navels  Rumbustious  Tagboard
Acron  Blacksmith  Condemns  Drubs  Grocery  Legatees  Navel  Salic  Takes
Advice  Bonds  Cone  Dulosis  Grunge  Lewd  Nepal  Schist  Trampels
Aftermath  Bottle  Crafty  Eclesiastic  Haggis  Lied  Nervecell  Separate  Transcendent
Alaska  Braggarts  Danuse  Eclosion  Hairnet  Loveknot  Nicene  Serows  Transcribes
Alumina  Brede  Deans  Elapses  Eluviate  Lupine  Nightingale  Sighted  Trickier
Ammal  Changeful  Demon  Eluviate  Elvish  Marsupial  Offshore  Sired  Unbodied
Anovulant  Cheap  Deplores  Ensnares  Excoration  Individualy  Megaera  Pares  Undeceive
Attend  Circumscribe  Depreciates  Feeler  Footling  Instance  Memento  Pares  Underrate
Aussie  Clemency  Devoice  Footling  Kiwi  Miscalls  Remembered  Regale  Validates
Baboon  Coeternal  Divide  Gamut  Munch  Regale  Reined  Regale  Valued
Bails  Collaborate  Dreamy  Gridiron  Landings  Reined  Remembered  Shrubs  Vernal

Keemat: January – February 2021  Designed by Dr. Sitaram Dixit, Chairman CGSI

19
Investing all your money in one source may not reap you the ideal results.

**Diversify your investments.**

Diversifying your investments helps you reach your financial goals faster by protecting you against significant losses and increasing your chances of getting better returns.

To report any market irregularity, call **022 22728097**

THE WORLD’S FASTEST EXCHANGE WITH A SPEED OF 6 MICROSECONDS.

[www.bseindia.com](http://www.bseindia.com) | Follow us on: [facebook/BSEIndia](https://www.facebook.com/BSEIndia) | [twitter/BSEIndia](https://twitter.com/BSEIndia) | [linkedin/BSEIndia](https://www.linkedin.com/company/bse-india) | [instagram/BSEIndia](https://www.instagram.com/bseindia)

Disclaimer: Issued in public interest by BSE investor protection fund.