

Standard IX

Action Research Project

Topic for 2021–2022

Immunity Boosters

Introduction

Since March 2020, we have been at home due to a novel corona virus. This tiny structure that we may be able to observe only through electron microscope, has changed several aspects of our life. Suddenly we have been extra-cautious and conscious about civic sense, cleanliness, environment, and health. A lot of information is bombarded through print and electronic media. The information may be comparatively new but more effective. A lot of discussion was focused on immunity and immunity boosters. Several new products were launched and existing products were marketed aggressively.

Wealth of a nation is in the health of its citizens. Being healthy is our duty. To a great extent our health depends on our immunity. So we must try to understand what is immunity, is it possible to strengthen it, can it happen overnight? Let us try to understand a few points about immunity. Immunity is our ability to keep diseases at bay. The immune system helps us do that.

Types of Immunity

1. Basic Immunity: Basic type of immunity is the inborn or innate immunity. This natural immunity mainly works by preventing entry of disease-causing agent i.e. 'antigen' in terms of immunity, through barriers like skin, mucous membrane, and other elements of the body. Also, other body mechanisms like inflammation, fever or even the acid present in gastric juice or certain chemicals present in saliva and tears can also invite some disease-causing agents. The body has the capacity to discriminate between self and non-self. If disease-causing agent escapes the barriers (i.e. they enter inside our body), there are several cells in various tissues like blood, liver

etc. ingest and destroy them. You must have heard about white blood corpuscles or WBCs. All these barriers and cells, that are the front-line warriors of our body, are a gift of nature to us.

2. Adaptive Immunity : The adaptive immunity is the machinery of the body to tackle the hard nuts that have surpassed the innate system and are trying to make us sick. Here our body produces certain proteins, what we call as antibodies, that help in fighting disease. This is a very specific action and our body is trained to fight such dangerous antigens individually. Antibodies specific to antigen continue to offer protection even during the future encounters of that antigen or 'that disease'. From the moment we are born, we get exposed to several antigens every day. The adaptive immunity helps in prevention of disease as it trains the body in preparation of antibodies in advance.

3. Natural Passive Immunity: One must have seen or heard the campaign about importance of mother's milk for an infant. Mother's milk contains special types of proteins, which form antibodies that help to protect the baby from disease.

This is natural passive immunity. As the immunity power of infants is very low, it is developed by mother's milk. But this process lasts for a certain period only. Hence it is known as 'Limited Natural Passive Immunity'.

4. Artificial Passive Immunity: The monoclonal antibodies used in treatment plan of COVID-19 can be termed as artificial passive immunity. Building an immune system is an intricate or complex process, which involves several cells and systems of our body. Also, we must understand

that we, the humans and other living beings coexist in this world. Any disturbance in the ecosystem may lead to emergence of new pathogens due to mutation causing new diseases.

So, it is necessary to be healthy and develop a strong and effective immunity power. How do we strike a balance in the ecosystem? How do we protect ourselves from harmful pathogens? What we need to do to make our immunity system strong? What will happen if there is wholesale boost in the immunity? What are the chances of hyper immune responses like allergies, diabetes or auto inflammation and auto-immune disorders by the overconsumption of proteins forming antibodies? It may happen that by the entrance of harmful viruses or bacteria in our body, the cells which fight against the diseases may be damaged. Also, the side effects like inflammation, etching production of excess of proteins in blood, etc may be observed. The good immune system thus needs a proper diet in terms of balance between micro and macronutrients, exercise, and related physical fitness, happy and positive approach in life, and healthy lifestyle. There is a news that during the COVID-19 pandemic as people are conscious about personal hygiene and social distancing, there is a decrease in cases of diarrhea, fever, and skin diseases. Thus, immunity boosters are those elements or processes which develop our immunity power to fight against the harmful pathogens to remain healthy. Immunity boosters include vitamins, minerals, antioxidants, and probiotics as well as other complementary and alternative medicines. Whether the use of such immunity boosters to increase our immunity power can be considered as an effective alternative to vaccination is a big question. This is an important aspect at a time when vaccine hesitancy is a major threat to global health, as indicated by the World Health Organization (WHO). One must learn to analyze the information to select the products wisely. Even a good immune system cannot be developed at instant.

Think and Collect Information About:

1. Are deficiency diseases caused by vitamins and minerals related to immunity?
2. Is it necessary to take supplements of Vitamin C to protect ourself from COVID-19?
3. Is this the same Vitamin C which is consumed when one suffers from scurvy?
4. How does this vitamin helps our body to fight infections?
5. Is it necessary to take additional Vitamin C tablets, if one's dietary intake of lemon, lime, *amla*, and other items rich in vitamin C is regular?
6. What will happen to the water soluble vitamins like B complex or C, if consumed in excess?
7. Is it good or bad for health, if extra doses of vitamins like A or D are consumed?
8. How are vitamins helpful in the production of various antibodies in our body to boost our immunity power?
9. Analyze immunity boosters available in the market or home-made or prepared by yourself.

By collecting the scientific information related to the questions given above and beyond will clear the ideas about immunity boosters, which will be helpful in avoiding confusion.

Suggested Categories of Immunity Boosters for Research Topic

From the point of view of convenience, immunity boosters may be classified into following categories.

1. **Fresh Fruits and Vegetables:** Fruits, green and other colourful vegetables, salads should be included in lunch and dinner. Also dry fruits and nuts may be added to this category.
2. **Spices and Condiments:** Whole and ground spices, e.g., *goda masala*, *garam masala* and various *chutneys*, pickles/*murambas*, etc. are included in this category. These ingredients or accompaniments are helpful in boosting our immunity.
3. **Beverages:** Tea/Coffee/*Ukala* etc.
4. **Traditional Immunity Boosters:** *Kashaya*, boiling milk with false black pepper (*vavding*), water with dill seeds (*badishep*) and false black pepper, jaiphall, turmeric in combination with milk/honey/jaggery etc are all traditional

immunity boosters. *Aayush kadha* may also be added to this category.

5. Traditional Indian Food Items and Various Methods of Cooking: Addition of spices/ cooking temperature, etc. may improve immunity. Also consumption of *til laddoos* during the winters (specially *Makar Sankrant*), *Diwali faral*, mangoes in summer, etc in short consumption of specific Indian food items during specific festivals.

6. Synthetic/natural immunity boosters in the form of tablets/syrups/powders: These are in the form of lozenges, *arishta*, *asava*, *kalpa* etc. For example, papaya leaf extract in the form of tablet is used in the treatment of dengue.

8. Meditation

9. Jogging or Brisk Walking, Swimming or Outdoor sports

What Students have to do?

Considering the pandemic situation, students are **NOT** expected to go out and do the work. They may carry out surveys/ interviews as per the need of the topic selected through e-means or telephonic interviews etc.

You have been observing and experiencing the pandemic situation for more than a year and half now. You must have come across interviews, articles, short films about immune system, its importance and immunity boosters. People around you must have taken up one or the combination of various means to boost their immunity.

Make a note in your mind about your observations of such practices.

1. Select **ANY 1** practice.
2. Find out information about whether and how does the practice help to avoid disease/s (by forming a coat, by triggering the immune response, etc).
3. Information about should it be continued throughout the year by each one or by specific people or specific time or on observing certain conditions/symptoms.
4. Study the actual benefits, if any, gained by the people who followed the practice.
5. Analyze the data.
6. Draw conclusions based on:

A) Observations

B) Effectiveness of the selected immunity boosters

C) The effective duration

D) The quantification.

7. Check whether the results remain similar for various age groups or genders.
8. Add your learnings about the immunity boosters from the study in terms of necessity and intensity. Also, mention your views about lifestyle changes in relation to immunity building at the end of the project report.

It is not mandatory for the students to select from the above list of topics. The student can select any one topic of his/her choice, which will be:

- a) Related to the main theme (i.e., immunity boosters)
- b) At local level
- c) Within his/her capacity
- d) Of scientific approach.

Examples: ‘Study of effectiveness of traditional use of turmeric and jaggery in controlling throat infections.’

Hypothesis: Traditional use of turmeric and jaggery is effective in controlling throat infections.

Points to be Considered:

- Information about the role of turmeric and jaggery separately in reducing the symptoms as well as controlling the disease.
- Information about whether these two components are complementary to each other or not.
- Gather the data from various sources available in the form of news, surveys, interviews, articles, etc.
- **Methods to be Applied:** Administration, proportion, time of administration, etc.
- **Conclusion:** Whether the method proved effective in terms of reducing the symptoms or actually controlling or reducing severity of the infection without using any other medicine. Also mention the topics for further research.

Selected Project Reports

1

- **Name:** Krishang Neelesh Borkar
- **School:** S.V.K.M.'s C.N.M. School, Vile Parle, Mumbai.
- **Std:** IX
- **Theme:** 'KASHAYA - The Real Taste of Health'.
- **Year of Project:** 2018-19
- **Title:** Study of our Food Heritage

This Action Research mainly focussed on the study of 'Kashaya' - a traditional health drink and its unique proposition.



The researcher used a mix of survey and experimental method to find out how 'Kashaya' is a perfect substitute to the so-called popular choices like tea, coffee and aerated drinks.

The researcher collected primary as well as secondary data by using different tools like interviews of doctors and dieticians.

His research document included a detailed recipe of preparing the *Kashaya* powder that acts as an anti-oxidant. A detailed quality analysis report from a food testing laboratory mentioning all the vital parameters of the *Kashaya* Milkshake prepared by the researcher was also appended. The laboratory certified that the drink is in standard format. Furthermore, the researcher performed a pilot on over 200 people to verify the effectiveness of the drink.

To create awareness about *Kashaya* among all his schoolmates and society, he published posters and distributed handbills. In conclusion section, the researcher mentioned all the unique selling points (USPs) of *Kashaya*.

2

- **Name:** Tanuj Makarand Vaidya
- **School:** Tilaknagar Vidyamandir, Dombivli.
- **Std:** IX
- **Theme:** Sustainable Tourism
- **Year of Project:** 2017-18
- **Title:** Creating Sustainable Tourism at Padle Village

Master Tanuj Vaidya has studied sustainable tourism as his action research project.

Padle village, situated 10.5 km. from Dombivli in Thane district, is a hotspot for birds and is famous amongst bird watchers and has wetland, grassland



and forest. With this diverse variety of habitats there are about 170 types of different species of birds, from which 62 species are migrants and the remaining 108 species are residents of Padle. Since a large number of avifaunal species is seen throughout the year, bird-watching tourism has flourished in Padle over the last few years. Wildlife tourism organizations

like 'Mumbai Travellers' arrange bird-watching trails to Padle village but they do not involve the local villagers. As a result, the tourists face inconvenience. The absence of local support for nature-conservation has created certain negative impacts.

In the trail organized as a part of this project, Tanuj studied these negative impacts to transform them into positive impacts. Implementation of the recommended corrective measures benefited the locals, the tourists and mainly the ecosystem.

Noteworthy points: Tanuj collected the first-hand information by personally visiting Padle village and also through other resources such as websites, questionnaire for villagers, interviewing experts, bird-watchers, tour organizers etc. He used the latest websites to check records and verify the collected data. The negative impact was tabulated in the form of graphs. The corrective measures were suggested and implemented. Thus, the project became action-oriented thereby increasing its value.

Supporting documents like references, questionnaire, data analysis, photographs were attached with the project.