REPORT ON A PUBLIC SYMPOSIUM ON SURVIVING VIRAL PANDEMICS IN RESOURCE-CHALLENGED ECONOMIES: THE PLACE OF PLANT-BASED DIETARY REMEDIES

PREAMBLE

The African Centre of Excellence in Public Health and Toxicological Research (ACE-PUTOR) in collaboration with the Nutrition and Food Safety and wholesomeness Prevention, Education and Research Network (NOODLES), Italy with approval from the University Management organized a one-day public symposium on surviving viral pandemics in Resource-Challenged Economies: the place of plant-based dietary remedies. The event was held on Tuesday 4th May, 2021 at Ebitimi Banigo Auditorium, University Park, University of Port Harcourt.

METHODOLOGY

As part of the Centre's mission to provide a platform to congregate highly skilled human resource both within and outside the University, build a robust resource of highly skilled and motivated public health professionals who are equipped with current knowledge, skills and competencies, the Centre organized three of its PhD students as resource persons who gave a public symposium on four different areas of the place of plant-based dietary remedies.

These includes:

1. Food substances and viruses
2. Plant-derived food grade substances that are active against respiratory viruses.
3. Nutritional remedies for covid-19
4. Dietary quercetin as potential therapy against convid-19.

SYMPOSIUM

The one-day symposium was well attended by the Ag. Vice-Chancellor, Prof. Stephen Okodudu ably represented by the Academic Coordinator of the University Prof. A. Kilani and other Principal Officers as well as staff and students.

The Centre Leader, Dr. Daprim S. Ogaji in his opening remarks welcomed the Ag. Vice-Chancellor and others present both on site and online. He gave a brief background on the reason the Centre organized the one-day symposium with the focus on the possibility of preventing, treating or managing covid-19 and other viral pandemics through deliberate consumption of plant-based diets that are rich in anti-viral constituents by those infected.

He informed the public that the world had faced several pandemics and is currently battling the covid-19 pandemic which has claimed over 3million lives so far across the world. He informed the public that global efforts are currently focused on the development of drugs and effective vaccines against covid-19.

He informed the public that the symposium would highlight evidence on the therapeutic potencies of different constituents of plant-based diets against different viruses such as respiratory viruses and coronaviruses. He also informed the public that the Centre is willing to play a major part, in fulfilment of their core mandate as a Centre of Excellence in Public Health and Toxicological Research. He further explained that the overall goal of this symposium is to raise people's consciousness on the therapeutic potencies of the constituents of common plant-based diets against viruses.

The resource persons who are ACE-PUTOR PhD students presented the evidence syntheses as follows:

FOOD SUBSTANCES AND VIRUSES

Dr. Benson Ephraim-Emmanuel in his presentation informed the public that over the years, a good number of viruses have been in plated as causative agents of various organ systems in man. He went on to say that the various organ systems in the human body can be affected by diseases caused by viruses which have resulted in outbreaks, morbidities and mortalities in human populations. He said that certain factors continue to pose challenges to the provision of effective and durable antiviral agents to tackle this problem and that these include high viral mutation rates, the development of resistance etc.

He further explained that these have continually propelled scientists to delve into the science of identifying natural sources useful in inhibiting viral infections. He informed the public that during research, it has been found out that a weakened immune response is associated with inadequate nutrition and food substances which can provide both indirect and direct antiviral actions. He said that the indirect action involves strengthening the body immune system to be capable of clearing the virus and the direct action involves interaction or interruption of the various kinds of the viral life cycle including viral entry, viral attachment and internalization, replication and other viral protein activities as well as the assembly and shedding of the virus.

He explained that direct action also involves enhancement of antiviral immune responses of the body and the suppression of virus-induced cytotoxicity and that these antiviral effects of plants are attributable to active biochemical constituents of the plants including flavonoids, terponolds, vitamins C and D, micronutrients, quercetins, anthocyanidins etc.

Dr. Benson Ephraim-Emmanuel concluded his presentation by saying that it is apparent that a healthy, balanced diet can offer the necessary macro and micronutrients, prebiotics, probiotics and symbiotics that can restore and maintain immune cell functions of the body. He further advised that a return to our native fruit and vegetable rich diets in both food and drink forms on a regular basis is recommended for effective antimicrobial action and healthy living.

2. PLANT-DERIVED FOOD GRADE SUBSTANCES THAT ARE ACTIVE AGAINST RESPIRATORY VIRUES

Dr. Francis Umeoguaju in his presentation informed the public that respiratory viruses are viruses that infect the human respiratory tracks and that common example of this group of these viruses include the influenza virus, the rhinoviruses, the respiratory syncytial viruses, the coronaviruses, etc. He further explained that these viruses are responsible for several cases of yearly infections and mortalities for instance, the influenza virus infects over 20% of the world's population annually and results in over 500,000 of yearly mortality. He informed the public that respiratory viral infections are present with symptoms that includes sore throats, runny or stuffy nose, headaches, muscle aches, fatigues, feverish feelings, pneumonia, prolonged cough, sneezing, etc.

He further informed the public that the evidence identified from scientific literature shows that some functional constituents of plant-based diet such as the polyphenols, flavonoids, phenolic

acids, lectins, curcumin, vitamin D, certain plant glycosides as well as some dietary beverages such as the guava tea, hibiscus sabdariffa (zobo), green tea, black tea are able to inhibit some respiratory viruses in test tube experiments as well as protect laboratory animals from cellular damages and mortalities caused by respiratory viruses.

He informed the public that these viruses prevent viral ability to infect new host cells by directly interacting with viral surface coasts and host cell receptors and that they are also able to prevent the production and release of more viruses into host cellular environments and stimulate the productions of effective immune responses against respiratory virus as well as suppress respiratory virus-induced inflammatory damages in infected cells.

Dr. Francis Umeoguaju concluded by saying that based on the highlighted evidence from non-human studies, he recommended the increased consumptions of food that are rich in these plant-derived anti-respiratory viral substances, as a dietary strategy to suppress and manage respiratory viral infections.

NUTRITIONAL REMEDIES FOR COVID-19

Dr. Joy Uba in her presentation informed the public that the coronavirus disease 2019 (Covid-19) is caused by the severe acute respiratory syndrome (SARS), coronavirus 2 (SARS-cov2) is currently ravaging the world with mortality exceeding 3 million persons worldwide. She further explained that SARS-cov2 gets into host cells following successful interaction between SARS-cov2 spike protein and angiotensin converting enzyme 2 (ACE2) expressed on host cells and that following successful invasion of host cell, SARS-cov2 subsequently utilizes host replication and protein synthesis machineries to produce multiple copies of its progeny viruses.

She informed the public that the pathological features of covid-19 infection include excessive inflammatory damage to the human respiratory track which subsequently leads to breathing difficulty and other respiratory disorders. She further explained that this review assessed available evidence to identify dietary substances that has potentials to suppress SARS-COV2 life cycle as well as prevent SARS-COV2 related morbidities.

She informed the public that the literature review identified probiotics, micronutrients which includes vitamin C, vitamin D, selenium and zinc, essential oil and certain dietary phytochemicals, as having great prospects for application in covid-19 management. She further

explained that these probiotics enhances innate immune responses against viruses as well as suppresses virus induced systematic inflammation by down regulating interlinking expression.

She informed the public that zinc interferes with viral life cycle also enhances the production of interferons, selenium, vitamin A and vitamin C can suppress virus-induced oxidative damages.

She further explained that phytochemicals such as glycyrrhizin which is from licorice, lycorine which is from onions and garlic, polyphenols which is from fruits and vegetables, resveratrol which is from groundnut, grapes, curcumin which turmeric, also interferes with different stages of SARS-COV2 life cycle. She informed the public that essential oils from eucalyptus and garlic have also been demonstrated to be capable of inhibiting critical SAR-COV2 PROTEINS.

Dr. Joy Uba having presented the above nutritional remedies for covid-19, recommends that a multi-targeted approach to covid-19 prevention and management through the deliberate consumption of diets which are rich in antioxidants, immune boosting, anti-inflammatory and antiviral constituents will help or serve as nutritional remedies for covid-19.

DIETARY QUERCETIN AS POTENTIAL THERAPY AGAINST COVID-19

Dr Francis Umeoguaju in his presentation informed the public that the world is currently battling with covid-19 pandemic which had led to over 3 million worldwide death in less than 2 years of the covid-19 pandemic and that covid-19 are caused by SAR-COV2 viruses and these SAR-COV2 belongs to the family of coronaviruses and has about 70% similarity with the genes of earlier MERS and SARS-COV strains of coronaviruses.

He further explained that the evidence obtained from test tube experiments and computational analyses of coronavirus surface coat and host surface receptors showed that quercetin can suppress coronavirus proliferation and pathologies in host cells. He informed the public that this can prevent a successful infection of a new host cells by the coronavirus and that quercetin is also able to directly inhibit critical viral proteins such as SARS and MERS COV 3clao and Pipro, SARS-COVNTpase/helicase that function in the production of new viral genome. This effectively suppresses the production of new infective coronaviruses in infected host. Quercetin has been shown to possess potent antioxidants and anti-inflammatory properties in many test-tube and animal studies. He further explained that the species and experimental model differences may also present some challenges but that despite these limitations, quercetin holds

some promise in suppressing the pathogenesis if covid-19 infection in humans and some clinical studies are under way to ascertain the potency of quercetin amongst covid-19 patients.

In conclusion, Dr. Francis Umeoguaju informed the public that quercetin is particularly abundant in onions, apple, moringa leaves, pepper, cowpea and sweet potato leaves. He further explained that increased intake of quercetin rich food may offer additional therapeutic strategies against covid-19 infection.

EXPECTED OUTCOME AFTER THE SYMPOSIUM

The Centre and the Nutrition and Food Safety and Wholesomeness (NOODLES) sees the important deliverable from this symposium as the evolution of a multidisciplinary collaboration involving the faculties of Services, Agriculture, Pharmacy, Basic Medical Sciences and Clinical Sciences of the University and the Community of our sister institution.

This multidisciplinary team will validate existing evidence and research into innovative ways in which these plant-based antiviral constituents can be extracted, enriched, and utilized in a manner as to increase our stockpiles of effective home-grown antiviral therapies against current and future viral pandemics.

Confidence Igwe
Admin Head/Desk Officer