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Can green jackfruit flour as a nutritional supplement replace haemopoietic growth factor?

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Introduction: Chemotherapy, adjuvant, neoadjuvant or palliative, is an integral part of the management of solid tumors, depending on stage. Bone marrow suppression (toxicity) and the resultant leucocytopenia is a known complication for majority. Haemopoietic growth factors like filgrastim is hence given either along with chemotherapy in high dose schedule or once the leucopenia sets in to prevent chemo toxicity and eventual death. A repeated admission to manage chemo toxicity also adds to the cost and reduces quality of life. Dietary modifications have been in vogue for patients receiving chemotherapy for better digestion and energy. Administering a food product as dietary intervention to perform as a haemopoietic growth factor is a novel concept in Oncology and reported for the first time.

A Priori Hypothesis: Kerala had the tradition of consuming mature green jackfruit as a meal and in the recent years it has emerged as an effective alternate to rice to control blood sugar levels due to its soluble fiber, pectin and lower glycemic load. Researchers have reported jackfruit extract can reduce pro inflammatory cytokines indicating its anti-cancer properties. In addition researchers have reported that dietary pectin increases survival of bone marrow cells and intestinal crypt stem cells during chemo and radio therapy. Considering the potential anti-cancer properties of jackfruit and properties of pectin to reduce bone marrow suppression, a priory hypothesis used for the study was, administering 30gms of green jackfruit flour, which contains 1 gm of pectin, as a dietary intervention could perform as a haemopoietic growth factor for patients receiving chemotherapy.

Methods: Cancer Patients with Solid tumors of Breasts, Lungs, Head and Neck, Gastro Intestinal System, Ovaries, Endometrium, soft tissue sarcomas etc. were included. The drugs included Anthracyclines, Taxanes, Anti angiogenic factors and targeted chemo therapy drugs like Herceptin, High dose Endoxan, etc. The preliminary feasibility study group consisted of 25 Patients who presented since June 2018 to December 2018. Patients were given free sachets of 30gms green jackfruit flour to be used in single divided doses along with staple food per day from first day of chemotherapy through the last day of each cycle of 21 days, till the completion of the course. Blood examination for Hb, WBC count and platelet counts were done on 5th, 7th, 9th and 12th day. 20/25 patients completed the study. One patient with metastatic disease on palliative chemotherapy died during this period, 4 patients opted out due to lack of taste.

Results: Out of 4 patients who refused to take the green jackfruit flour, all of them necessitated haemopoietic growth factor for a minimum of 5 days, after admission with all supportive drugs, antibiotics, including ICU admissions in 2, when the nadir dropped. Among the 20 subjects who completed the 6 cycles, 2 patients necessitated haemopoietic growth factor, in the 5th and one in the 6th cycle for 2 days to get back the normal counts. The supplementation with green jackfruit flour, drastically dropped the sales of the growth factor which in the 20 subjects, amounted to Rs.1,40,000/- (@1400 /- per vial) which if translated across the country will amount to several hundred crores.

Conclusion: Dietary intervention to prevent neutropenia, for those who undergo chemotherapy is reported for the first time in oncology. Jackfruit is a tropical fruit available in several countries. The anti-diabetic effect green jackfruit is well established. This pilot study merits multi-centric trials on large population. The money saved by avoiding administration of hematopoietic growth factor, repeated hospital admissions, antibiotics etc. could be phenomenal when widely used. The quality of life and psychological satisfaction when neutropenia is avoided while undergoing

chemotherapy, adds value to this novel dietary intervention.

Biography

James Joseph is the author of the best seller "God's Own Office - How One Man Worked for A Global Giant from His Village in Kerala" published by Penguin Books and released by Shri Oommen Chandy then Chief Minister of Kerala on October 8th, 2014. Malayalam translation of the best seller got published by Manorama Books and released by Kris Gopalakrishnan, Co-Founder of Infosys in October 2015. He has a Masters in Engineering Business Management from University of Warwick, UK and has a degree in Mechanical Engineering from College of Engineering, Thiruvananthapuram. He pioneering research helped

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