

Executive summary Report

1. Title of Project : Formulation of Probiotic health drink using different traditional herbs and its evaluation using animal models
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4. UGC Approval Letter No. and Date : No. F. MRP-6063/15 (SERO/UGC) Dated January 2015
5. Date of Implementation : 29.01.2015
6. Tenure of the Project : From 29.01.2015 to 28.01.2017
Two years

SUMMARY OF THE FINDINGS

The present study was performed to formulate a nutritional enriched probiotic herbal beverage and to evaluate its anti-cancerous activity and safety through supplementing to Wistar rats. Based on phytochemical properties of Herbs, *Hemidesmus indicus* (Nannari roots), *Ocimum tenuiflorum* (Basil) and *Aloe vera* were selected for study. Herbs were formulated into herbal juice through preparation of various trials. Based on sensory evaluation through Nine point Hedronic scale method, best formulations were selected. Lactobacillus isolates was isolated from different probiotic sources. Potential bacteria were identified based on survival rate in different range of pH, bile, salt concentration and temperature. Selected strains were molecular characterised and found to be *Endococcus durans*. Hence, using this potential isolate probiotic herbal drink was formulated. The formulated drink was subjected to nutritional analysis and antioxidant assay and it was found to be improved when compared to herbal drink alone.

Significant difference was noticed in antimicrobial activity when compared with probiotic herbal and herbal drink alone. The results of anti-cancerous activity were highly favourable. The cells treated with probiotic herbal drink exhibited apoptotic characteristics including marginalization and/or fragmentation. The cytological changes indicate that the cells were committed to specific mode of cell death, either apoptosis or necrosis.

To ensure safety to the consumer, regulatory guidelines and systematic approach was developed by Indian Council of Medical Research (ICMR), In vivo efficacy studies in animal models were carried out. Animal studies were performed using 18 male Wistar rats. They were divided into three groups. Group 1, 2 and 3 rats were fed with probiotic bacteria, probiotic herbal juice and Herbal juice alone. Body weight of group 2 rats gave 10.6 % increase in body weight and which was higher than group 1 and group 3 rats. In addition to that, rat fed with probiotic bacteria and probiotic herbal juice showed increased number of colonies when compared to rats fed with herbal juice only. The results of gut microbiota showed that, rectum region of all the rats belonging to group 1 and 2, exhibited increased LAB growth. No significant difference was noticed between the groups where probiotic bacteria was given as supplement. Translocation assay gave positive results, where proliferation of LAB was not noticed in heart, liver and kidney. The biochemical parameters including Blood glucose level, total protein, albumin, globulin, Bilirubin, cholesterol, Triglycerides, Serum creatinine, SGOT, SGPT and Alkaline phosphatase were evaluated. All the parameters were found to be within the normal range and no complication was observed between the rats. From this study, it concluded that the probiotic herbal juice will have a potential nutritional, antioxidant activity and anticancer activity. Probiotic bacteria were able to proliferate in gut microbiota of rats and have provided several health benefits. Moreover, the product obtained can be used by all group of people owing to its less cost and various beneficial effects with less side effects.