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Short Communication

Probiotics with Dimethyl Hydrazine Induced Animal Study as New Psychological Study Model

Abhinandan Patil[1], John Disouza[1] and Shivaji Pawar[1,2]*

[1]*Centre for Interdisciplinary Research, D. Y. Patil University, India*
[2]*Centre for Research and Technology Development, Sinhgad Institutes, India*

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***Corresponding author**

Shivaji Pawar, Centre for Research and Technology Development, Sinhgad Institutes, Solapur, (MS), India,
Tel: +91 8380025689;
Email: shpawar1946@gmail.com

Introduction

Prolonged diet alternation is thought to be having relation with the gastrointestinal health of the individual. Even the psychology of the individual is directly co-related with the food habit bowel movement and disease condition of the gastrointestinal tract. The drastic and fluctuating bowel movement due to an imbalance between probiotics (natural flora) and wear and tear of intestine makes an important contribution to colorectal cancer (CRC) risk [1]. Therefore, the probiotics especially *Lactobacillus* is suggested as the curative measure in colon cancer as nutraceutical mode of treatment [2]. Thus Lactobacillus is found more effective in maintaining psychology of individual related to the pathophysiology of the gastrointestinal tract [3-7].

Many animal models are available to study colorectal cancer by chemical induction method using 1,2 dimethylhydrazine dihydrochloride (DMH)-induced chemical colon carcinogenesis in Wister rats. But it was found that same model can be used to study the psychology of animal related to disease condition of the gastrointestinal tract [8,9].

The purpose of this study was to develop and use an unconventional, dimensionally based approach to understanding the reasons for comorbidity between gastrointestinal health and psychological disorder may be diet related obsessive-compulsive disorder. In this study, four probiotics strains isolated from the sheep milk was used. The authentication of these probiotics was done as *Lactobacillus rhamnosus, Lactobacillus acidophilus, Lactobacillus Plantarum, Bacillus cereus* by whole genomics sequencing from D and B genomics Germany. These four potential probiotics were used to compare their protective ability and sustainability against gastrointestinal disturbance using 1,2-dimethylhydrazine dihydrochloride (DMH)-induced chemical colon carcinogenesis in Wister rats. The DMH generally drastically affected the bowel movement of intestine resulting in loss of appetite of the animal. Capecitabine was used as the synthetic drug against the DMH as a prophylactic agent. Animals were grouped into different probiotic groups were fed orally with 1×10^9 probiotics daily for 1 week, and then a weekly injected by DMH which was given intraperitoneally for 4 weeks with daily administration of probiotic and capecitabine to another group. The hematological evidence of only DMH-treated animals shown hemoglobin level [07.65 ± 0.8682 g/dl] which was decreased with increase in WBC [7989 ± 164.72] further resulted in severe loss of appetite and psychological collapse of the animal. The hematological evidence of *Lactobacillus rhamnosus* and *Lactobacillus acidophilus* + DMH-treated animals shown hemoglobin level [11.65 ± 0.6682 g/dl] which was increased with decreased in WBC [5989 ± 264.52] count in Wister rat, which further led to decreases in oxidative stress with less upset in the animal behavior. The hemoglobin level in a group of the animal receiving the *Lactobacillus plantarum* and *Bacillus cereus acidophilus* + DMH-treated animals [11.88 ± 0.8278 g/dl] was quite higher than [11.83 ± 0.4773 g/dl] standard group receiving the capecitabine. WBC count of the standard was [5825 ± 231.27] nearly same as in case of *Lactobacillus plantarum* and *Bacillus cereus acidophilus* + DMH-treated animals [5516 ± 87.242] and control group as placebo [5216 ± 94.57] which proved these probiotics shows a less adverse effect on WBC count same as a standard drug used. Superoxide Dismutase (SOD) enzyme analysis proved that oxidative stress was increased DMH group [10.51 ± 0.95 Units/mg of protein] as compared to the standard [23.33 ± 0.96 Units/mg of protein]. The group *Lactobacillus rhamnosus* and *Lactobacillus acidophilus* + DMH-treated animals shown an increase in SOD [18.27±0.57], while *Lactobacillus plantarum* and *Bacillus cereus acidophilus* + DMH-treated animals SOD as [18.27±0.57], same as to standard drug given group [18.91 ± 0.73]. The increase in oxidative stress with a decrease in Hb level and increase in WBC count affected the gastrointestinal health and psychology of animal seen in DMH induced animals. While probiotics have shown decrease in oxidative stress with increase in Hb level and a decrease in WBC count prevented the loss of appetite

and less psychological outbreaks as compared to DMH. Finally it is proven that probiotics act as good natural candidate used to treat the diet based gastrointestinal health and psychological disorder, may be diet related obsessive-compulsive disorder [5].

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