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## Immunomodulatory effects of probiotics and prebiotics on immune system during (DSS)-induced experimental colitis

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**Introduction:** The inflammatory bowel diseases (IBDs), represented mainly by ulcerative colitis and Crohn disease refer to chronic and relapsing disorders that affect the gastrointestinal tract. Studies have indicated that these diseases result from a lack of tolerance to resident intestinal bacteria in genetically susceptible hosts. It seems that in IBD the mucus barrier is broken. The production of high levels of the nitric oxide (NO) by the inflammatory cells plays a part in tissue injury; in the current study, we investigate the potential preventive effects of inulin on dextran sulphate sodium (DSS)-induced experimental colitis in Swiss albino mice.

**Methods:** The colitis was induced in mice via administration of 2.5% DSS in drinking water for 7 days. During this period the Swiss albino mice were given 1% (w/v) inulin in their drinking water ad libitum for 7 days. The production of NO was evaluated in the supernatants of peritoneal macrophages (pM $\phi$ ) cultures. The mucus production by the goblet cells in the colon was determined.

**Results:** A significant shortening of colon length was observed and high levels of NO in pM $\phi$  cultures were observed in DSS group compared to control. Oral administration of inulin decreased the severity of DSS-induced colitis. NO production in pM $\phi$  supernatants was lower in inulin group and correlated with a reduction of colonic lesions.

**Conclusion:** The prebiotic inulin improved DSS-induced colitis symptoms by down regulation of NO production and induction of mucus secretion. Prebiotics seem to be promising for development of preventive strategies approach for IBD using dietary supplementation.

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## Gene frequencies of ABO and Rh antigens among six populations of Jammu and Kashmir, India

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**Background:** Identification of blood group antigen frequencies in a population has various benefits in transfusion medicine, transplantation and disease risk. ABO and Rhesus (Rh) protein in human populations are used as the immunogenetic markers for anthropological, basic and applied medical studies.

**Objective:** The aim of the study was to record gene frequencies of ABO blood groups, their subtypes and Rh antigen for six different endogamous groups.

**Methods:** Nine hundred and ninety five (995) individuals irrespective of the age and sex were selected from six populations of J&K viz., Gujjar and Bakarwal (n=201), Mughal (n=155), Khan (n=151), Malik (n=155), Mir (n=160) and Syed (n=173). ABO blood groups and Rh antigens were tested by simple agglutination reactions on a clean slide by using specific antisera (Tulip Diagnostics; Goa, India). Genotypes and allele frequencies for each population were calculated by Hardy-Weinberg method and heterozygosity was determined.

**Results:** The ABO phenotypic frequency varies among six different populations showing significant difference ( $p < 0.0005$ ). Gujjar and Bakarwal (a tribal population) shows highest (42.29%) of B blood phenotypes. A1 is the highest among Syeds (39.31%), O blood group frequency highest among Mughals (43.23%) and A1B and A2B are rare phenotypes showing very low frequency among all populations. The pattern of allele frequencies ( $p < 0.025$ ) is in order of IO > IB > IA1 > IA2, except Syeds (IO > IA1 > IB > IA2). The rhesus protein (Rh) phenotypic frequency ( $p < 0.01$ ) shows significant increase in Rh(D) positive (87.86% in Syed to 96.03% in Khan) among all populations. The Rh allele ( $p < 0.05$ ) and genotype ( $p < 0.02$ ) frequencies shows a significant difference. Heterozygosity for Rh protein is less than homozygosity among six populations. The result from this study provides information on the genetic variation in blood antigens and rhesus protein among human populations inhabiting Jammu and Kashmir. Bringing health awareness through information, education, and communication activities about blood and Rh related disorders can help in preventing many of the immunogenetic, hematological and transfusion problems.

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