Immunotoxicity of nucleic acid reduced BioProtein - a bacterial derived single cell protein - in Wistar rats - DTU Orbit (15/10/2019)

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BioProtein is a single cell protein produced by a mixed methanotrophic and heterotrophic bacteria culture using natural gas as energy source, which has been approved for animal feed. BioProtein contains a large amount of nucleic acids making the product less suitable for human consumption, therefore, a nucleic acid reduced variant (NABP) has been developed by the manufacturer. The purpose of the present study was to establish the safety of NABP in a subchronic toxicity rat study. Groups of 10 male and 10 female Wistar rats were fed diets containing 0, 6, 12 or 24% NABP for 13 weeks. Feeding NABP induced a humoral immune response and proliferation of phagocytic cell lines, mainly macrophages. The humoral response involved induction of NABP specific IgM and IgG. The proliferation of phagocytic cells involved increase of the white blood cell count of all dosed female groups. Males showed the same tendency, although, not statistically significant (P = 0.09). The subsets of cells identified as neutrophils and eosinophils were increased and lymphocytes decreased. The histopathological examination revealed histiocytosis and accumulation of foamy macrophages in the mesenteric lymph nodes, hyperplasia of Kupffer cells in the liver, increased granulopoiesis in spleen and bone marrow, and infiltration of lamina propria of the large intestine with eosinophilic granulocytes. The most consistent and pronounced changes were observed in the highest dose group, but even at the lowest dose level some of the changes were present. Accordingly, a no-observed-effect level could not be established based on this study. (C) 2002 Elsevier Science Ireland Ltd. All rights reserved.

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