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Vaccination of lactating dairy cows for the prevention of aflatoxins carry over in the milk

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The vaccinal potential of a derivative of Aflatoxin B1 (AFB1), the most carcinogenic compound in food and foodstuffs amongst Aflatoxins (AF), chemically modified as AFB1-1(O-carboxymethyl) oxime, conjugated to keyhole limpet hemocyanin (KLH), in controlling the AFB1 metabolite AFM1 carry-over in the milk of lactating dairy cows, is reported. In comparison to AFB1, AFB1-1(O-carboxymethyl) oxime has proven to be nontoxic in vitro to human hepatocarcinoma cells and non mutagenic to *Salmonella typhimurium* strains. Combined with appropriate adjuvant, AFB1-1(O-carboxymethyl) oxime-KLH proved to be immunogenic in cows inducing a long lasting titer of anti-AFB1 IgG antibodies (Abs) which were cross reacting with AFB2, AFG1, AFG2. The elicited anti-AF Abs were able to prevent the secretion of AFM1 into the milk of cows continuously fed with AFB1. Vaccination of lactating animals with conjugated AFB1-1(O-carboxymethyl) oxime may represent the definitive solution to the public hazard constituted by milk and cheese contaminated with AF.

Biography

Luciano Polonelli, born in Parma on August 19, 1948, is Full Professor in Microbiology and Clinical Microbiology at the University of Parma, Italy. He has attended long periods of study at prestigious research Centers in Holland, France and United States. His research work has focused primarily on different topics of medical mycology and immunology, besides bacteriology and virology. Prof. Polonelli has authored or co-authored more than 230 publications on national and international journals and edited more than 20 books and book chapters of world wide diffusion concerning medical mycology and immunology. Prof. Polonelli is or has been in the Editorial Board and acted as a reviewer of many national and international microbiological and immunological journals and is member of many national and international Microbiological Societies. He has been repeatedly granted by national and international research Institutions and pharmaceutical companies and has deposited several international patents on anti-idiotypic antibacterial and conjugate antifungal and anti-mycotoxins vaccines as well as antibody-derived antifungal, antibacterial and antiviral peptides. Prof. Polonelli has been invited as a convenor or speaker at many international symposia and was the organizer in Salsomaggiore Terme, Parma, of the XIII Congress of the International Society for Human and Animal Mycology (ISHAM). He has served over the years as Vice President and President of the Mycology Division of International Union of Microbiological societies (IUMS), Vice-President of IUMS and Vice-President of ISHAM.