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(54) Title: COMPOSITIONS COMPRISING FETAL HEMOGLOBIN AND BACTERIAL ENDOTOXIN AND OPTIONALLY ADDITIONAL FETAL LIVER COMPONENTS

(57) Abstract: The present invention relates to a pharmaceutical composition representing a novel immunomodulating principle comprising bacterial endotoxin, fetal hemoglobin or more particularly a heme-free derivative or the γ-chain thereof, and optionally, components which are present in the fetal liver in addition to HbF. The composition is delivered to humans in a pharmaceutically acceptable carrier and/or diluent. In accordance with the present invention it was surprisingly found that endotoxin and fetal hemoglobin partial structures display a pronounced synergistic biomedical activity. The biomedical effect of fetal hemoglobin and its partial structures is surprisingly not based on a classical hemoglobin function as an oxygen transporter but related to a modulation of endotoxin-mediated bioactivity. This biomedical activity is surprisingly also observed after oral application of the composition. The composition of the invention finds a variety of applications which have in common the stimulation of the immune system and the reversion in polarization of cytokines and chemokines from a Th2-directed response to a Th1-type response. The proposed applications would therefore include the treatment of allergic conditions, malignancies, chronic infections, autoimmune phenomena and age-related imbalances.

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