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Transcutaneous Immunization with Hepatitis B Surface Antigen (HBsAg) Nanoparticle Adjuvanted with Aluminium Phosphate for Treatment of Hepatitis B

Monika Kaurav*, Sukant Kumar Sahoo and R.S.Pandey

*Institute of Pharmaceutical Sciences, Guru Ghasidas Vishwavidyalaya, Bilaspur (C.G.), India,
Tel:9926000671; Email: monika11kaurav@gmail.com*

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Transcutaneous immunization one of the most promising and well known immunization method now-a-days. Vaccine administration through the skin painlessly via a larger surface area than that used by a needle, referred to as transcutaneous immunization (TCI). The Nanoparticles are sub-nanosized colloidal structure composed of synthetic or semi synthetic polymers and having size range between 1-1000 nm. Hepatitis is an inflammation of liver, most commonly caused by a viral infection. Mainly five types Hepatitis are A, B, C, D and E. In particular type B leads to chronic disease in hundreds of thousands people. In present study, we prepared nanoparticles by using aluminium phosphate and HBsAg. Characterization of prepared nanoparticles done by FTIR, TEM, particle size & zeta potential measurement and by SDS-PAGE. TEM image of nanoparticles are spherical and FTIR shown characteristic peaks of Hepatitis B and aluminium phosphate. Zeta potential and particle size found to be -24.5 and 29-40 nm. The result of histopathological studies shown nanoparticles containing aluminium phosphate as adjuvant show more degree of inflammation and result of ELISA suggested that antibody titer produced by adjuvanted nanoparticle are more than other formulation such as nanoparticles alone and with hepatitis B alone. From all the study we concluded that preparation containing HBsAg adjuvanted with aluminium phosphate nanoparticles have long term immunogenicity cellular as well as humoral immunity.