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Abstract

Development of Novel Vaccine against *Pseudomonas aeruginosa* to Protect Immuno-Compromised Patients

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Abstract

Background and aim: *Pseudomonas aeruginosa* is an opportunistic pathogen affecting immuno-compromised patients resulting in multiple life threatening infections. The multidrug resistant (MDR) *P. aeruginosa* strains represent a major challenge to clinical therapy, however, no effective vaccine is currently available in the market. Here, we aimed to develop novel polyvalent irradiated *P. aeruginosa* vaccine to protect immuno-compromised patients.

Materials and methods: We developed polyvalent irradiated *P. aeruginosa* vaccine using cobalt 60.

Results: Inhibited pathogen viability but retained antigenic expression functionally. Mice were vaccinated by the developed vaccine by intranasal, intramuscular and subcutaneous route of administration followed by challenge test. The protective efficacy of the novel *P. aeruginosa* vaccine reached up to 95%. This significant protection was mainly associated with measurable antiserum opsonic killing activity.

Conclusion: The novel vaccine provides a promising strategy of both prophylactic and therapeutic approaches for immunocompromised patients against MDR *P. aeruginosa*.

Keywords: *P. aeruginosa*, Vaccine, Immuno-compromised, Irradiation, Protective efficacy, Challenge Test

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