

DEVELOPING NEW TOLL-LIKE RECEPTOR 4 (TLR4) MODULATORS AS INNOVATIVE AND INEXPENSIVE VACCINE ADJUVANTS

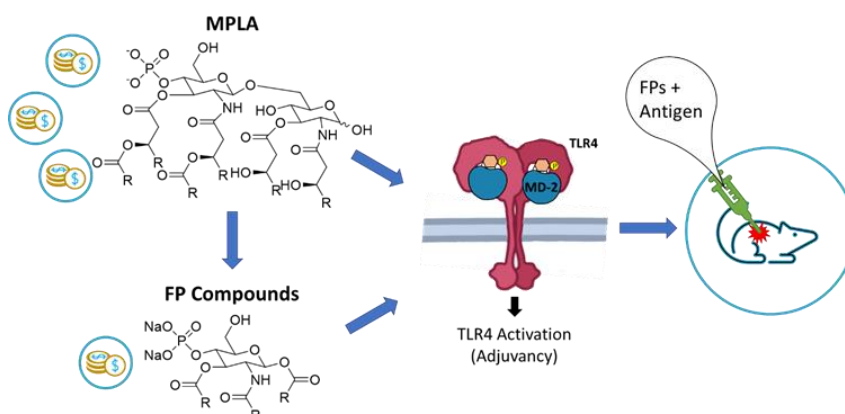
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Vaccines have been a breakthrough in medicine: they saved millions, reduced the incidence and morbidity of diseases such as polio, measles and tetanus and caused smallpox eradication.¹ Modern subunit-based and nucleic acid-based vaccines are safer and easier to produce than inactivated pathogen-based ones, but require adjuvants to achieve proper immunization.²

A vaccine adjuvant is any entity that enhances a vaccine efficacy. The most prominent is Monophosphoryl lipid A (MPLA), an agonist of Toll-like receptor 4 (TLR4) employed in several vaccine formulations.³ However, MPLA is a complex molecule with a long synthesis (>25 reactions), resulting in high final cost (~230 USD/mg).⁴ Recently, we developed FP compounds: a series of simplified, rationally designed MPLA analogues that retains its biological properties while costing a fraction of the cost.^{5,6}

We present here several examples of FPs applications, either as tools for research and as vaccine adjuvants able to immunize mice and rabbits against bacteria when administered together with purified bacterial antigens.^{5,7}



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