

Establishment of Cell-Culture Rabies Vaccine at the National Institute of Health

Introduction

It is estimated that upto 2,50,000 dog bites occur in Pakistan every year and many of them by feral animals. In this situation prophylactic rabies vaccination is essential but due to shortage and non-affordability of vaccine there is a yawning gap between the indication and the numbers of victims who get vaccinated. There is a great public health need to increase the availability of low cost vaccine against rabies. Rabies vaccine around the world is derived from cell culture technique.

Present Scenario

The National Institute of Health in Islamabad has been manufacturing rabies vaccines by the Semple method which uses sheep brain as the medium and the annual production has been 76,000 vials. This vaccine requires 14 injections and causes many adverse effects. Thus it has been withdrawn around the world and in response to the problems being caused, this vaccine has also been withdrawn by NIH.

The cell culture vaccine is being imported into Pakistan and although it is widely available and used, the cost of Rs.4000/- per treatment puts its out of reach of the poor patient in the rural areas. Thus only 30% of dog bites victims are immunized and the approximately 5000 cases of the fatal hydrophobia cases occur amongst the poor unvaccinated

Requirements:

There is a dire need for introduction of a local manufactured cell culture rabies vaccine at affordable prices for the poor victims of dog bites in Pakistan. The requirement of Pakistan is estimated at 1 million vials per annum. The NIH has some facilities for vaccine manufacture and thus is well placed to house such a project. Existing buildings can be used thus obviating need for civil works and the installed freeze dryers (2 units) utilized, thus further reducing cost.

Project Detail

It is proposed that international standard anti-rabies vaccine manufactured by cell – culture technique be made available by installing bio-reactor / fermenter in a pre-fabricated modular BSL-3 laboratory.

The new facility would be housed in a designated space within NIH (100x60 ft) and include:

1. Bioreactor
2. Vial wasting sterilizing / filling
3. Labeling and packaging
4. Freeze dryers (existing moved and integrated)

Cost Estimate

The cost estimates for a cell – culture rabies vaccine production and filling facility with output forecasted at 1 million vials per annum are as follows:

Budgetary Estimate for Rabies Vaccines Filling Facility at NIH, Islamabad

S. NO.	DESCRIPTION	US DOLLARS
1.	Civil Works (existing)	N/A
2.	Electrical & Related Works	115,080.00
3.	HVAC & Accessories	425,800.00
4.	Bioreactor in Modular BSL-3 Lab.	1,550,020.00
5.	Engineering Services – Design + Supervision + Hardware Training	355,000.00
Total Estimates:		2,445,900

Proposal

It would be a signal contribution to public health in Pakistan if a rabies vaccine production facility were to be established at NIH, Islamabad in a public private partnership.