“Hungry? Have a vaccine” – Oral Vaccines

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What?

Oral vaccines are a **non-invasive method of vaccinating**. This technology uses nanoparticle-releasing microparticles which can **selectively target different mucosal surfaces** in the gastrointestinal tract. [1] The design of the vehicle has been focused around three main categories, **particle-based, adenoviral vector and lipid based**. [3]

Why?

Removing the needle **eliminates the risk of blood-borne infections** and oral medication can be administered **without medical training**. Additionally, with the vaccine entering through the gut, **manufacturing is simplified** as the vaccine does not need to be additionally refined due to the environment, and therefore **storage requires fewer resources**. [2]

Why not make all vaccines orally administered?

Inherent obstacles presented for immune response induced through the gastrointestinal tract:

(i) **Successful delivery** to the intestine,
(ii) **transport** across mucosal barrier,
(iii) **activation** of antigen-presenting cells. [3]

Could the COVID-19 Vaccine be made available orally?

There are ongoing trials. Vaxart trials are currently in Phase II stage for an Oral tableted vaccine for COVID-19 (NCT05067933).

Are there any risks?

Like all vaccines, there are **elements of risk**.

Example: The Oral Polio Vaccine contains a weakened form of the Poliovirus. However, over time, this attenuated form can change and start to behave like the naturally occurring Poliovirus. [4]

Who?

The development of oral vaccines has many **socio-economic benefits** that greatly impact developing countries. Without a need for medically trained volunteers/staff, **administration of the vaccine could increase** and **require fewer resources** to increase the uptake of vaccines in the country. [5]

Author Comments

The nature of oral vaccines allows for greater uptake to **provide immunity on a wider scale**. Removing the need for needles as well as training for vaccinators, **overall costs could be greatly reduced**. This would benefit developing countries.

Risks associated with oral vaccination should be weighted appropriately against the advantages.

References

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