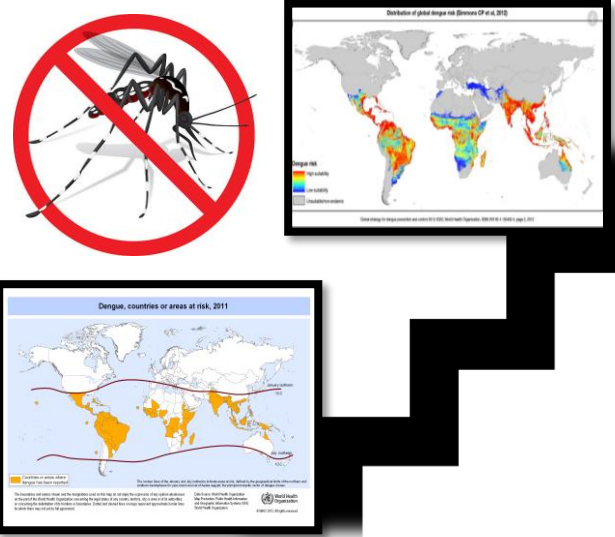


Evaluation of the diagnostic efficacy of saliva for detection of dengue antibodies- an ELISA study

Dengue, a mosquito-transmitted neglected tropical viral disease, with prevalence existing in 129 countries, studies estimate that 3.9 billion people are at risk of infection. Dengue cases reported to WHO increased to 8 fold over the last two decades with 4.2 million in 2019. Autochthonous cases are now reported annually in many European countries suggesting wide coverage apart from tropical and sub tropical belts. This alarming increase in rate, evidence of impact on both human health and the global and national economies, calls for an early detection and improved diagnoses. Though the traditional serological tests utilize blood as a diagnostic tool, saliva-based assays can be particularly useful in many aspects. This prompted us to investigate the utilization of saliva as a diagnostic tool for dengue. Therefore, the aim of the study was to evaluate the presence of *dengue antibody*, its *sensitivity and specificity* in *saliva* through ELISA.

METHODOLOGY & RESULTS



- **Unstimulated saliva samples** of about 3-5ml were collected from 20 seropositive patients with dengue and 20 seronegative cases on convenience in 20 ml wide mouthed bottles, immediately stored at -20 C until analysis.
- Dengue virus detection, Ig G antibody **detecting ELISA Kit, SD ELISA 3.0**, routinely used with serum samples was employed
- The procedure was standardized for detection of the antibody in saliva by running seropositive and seronegative cases, where the serum samples were used as controls, along with the inherent controls provided with the kit.
- On completion of the method, readings were obtained from an ELISA reader, adjusted to the **wavelength of 450 nm** and the results were tabulated.



SALIVA SAMPLES				
Serum samples	Positive	Negative	Sensitivity	Specificity
Positive	20	--	100%	100%
Negative	--	20		

All the 20 seropositive cases with Dengue infection showed positivity with the saliva samples, while all the 20 seronegative cases were negative with saliva samples too. Hence, **sensitivity and specificity of 100 %** was obtained.

DISCUSSION

The **clinical spectrum** of disease ranges from asymptomatic infection to DHF, or Dengue shock syndrome with consistent haematological findings, especially thrombocytopenia. **Efforts made to decrease transmission by vector control have failed, and no effective antiviral treatment is available or foreseeable on the immediate horizon. Hence, the importance of laboratory diagnosis of Dengue cannot be undermined.** Among the available serological detection methods, capture IgM and/or IgG ELISA, antigen-coated indirect IgM and/or IgG ELISA, and the HI test are most commonly employed. Currently, serum and more recently, **saliva samples** are being utilized for anti-Dengue IgG detection diagnosis.

Though the literature shows that various antibodies such as Ig A, Ig M, Ig E antibodies are detectable in diagnosis of Dengue on using saliva, we chose to **evaluate the presence of Ig G antibody in saliva for the following reasons:**

1. Due to its high sensitivity, specificity, simplicity, and feasibility for automation.
2. As it is useful for sero-epidemiological studies, for identifying past Dengue infections.
3. Anti-Dengue IgG appears in a low titre at the end of the first week of disease onset, and it increases slowly. High levels of IgG are detectable, even in the acute phase and they rise dramatically over the following two weeks.



Easy to collect

Store & transport

Sufficient quantity

Simplify repeated collection

Auxiliary personnel not required

LIMITATIONS

- Only a **handful of studies** are carried out despite the literature suggesting the reliability of saliva.
- Necessitates **further research** for implementation to a larger population

ON CONCLUDING NOTE

- ✓ Potentially improve surveillance
- ✓ Early detection of cases
- ✓ Infections at bay
- ✓ Implementation & initiation of treatment at early stages



The need of the hour is a Diagnostic Revolution With Greatest Impact specially for most remote or impoverished communities.

**SALIVA
A DROP OR AN OCEAN
ONE DROP NUMEROUS POSSIBILITIES**