

Research of anti-virus antibodies of measles, rubella, mumps and *Toxoplasma gondii* in saliva of schools and colleges of the city of Sao Paulo

Barbara Fialho Carvalho Sampaio, Rodrigues, J. P and Andrade H. F.

University of Sao Paulo, Brazil



Abstract

Safe and effective vaccines are a well-established public health intervention, with a major impact on the decline in the prevalence of infectious diseases, but outbreaks are occurring frequently due to primary and secondary failures. Serological control of the vaccination status and protection of a population is essential but is based on invasive blood sampling, problematic for children and teenagers. Saliva can be as acceptable alternative IgG source for children and other protected groups, due to IgG exuded in crevicular fluid. We intended to detect the prevalence of specific IgG response for measles, mumps, rubella and *T. gondii* in saliva samples, for evaluate vaccine efficiency and toxoplasmosis. For sampling, we promoted an interactive exhibition on hygiene in public elementary schools to collect 249 saliva samples from 7 to 13 years old students from São Paulo, Brazil. We developed and validated an IgG capture assay by solid phase *S. aureus* protein A, with revealing of IgG specificity by the use of biotinylated recombinant measles, rubella, mumps and *T. gondii* tachyzoites extract. This SpA capture assay fixes the same amount of IgG in the well, avoiding the IgG content variation in saliva. We used 50 validated positive sera from the IMTSP biorepository and as negative controls 40 pools of 4 samples from 160 discarded sera from children 6 and 10 months old, after maternal IgG clearance and before vaccination, which were in routine pediatric analysis in ICr HCFMUSP. The assays had reproducibility greater than 98% and sensitivity and specificity > 95%, using sera. Saliva and sera of 47 university students were tested for paired comparison, without discordance. We detected in the saliva from elementary students, a prevalence of 8.5% (95% CI 5-11.9%) for anti *T. gondii* IgG of, anti-measles IgG of 96.8% (95% CI 94.6-99%), anti-rubella IgG of 59.1% (95% CI 53-65%) and anti-mumps IgG of 57.5% (95% CI 51.3-63.6%). The prevalence of antibodies against mumps and rubella was lower than measles, as described in other reports, but this approach shows the feasibility of saliva for sustained follow-up of vaccine immune status in teenagers for devising more adequate re-immunization protocols. Our approach was efficient in all aspects, from the hygiene exhibition for sampling, the use of saliva and the development of reliable tests for the determination of the IgG protection in students and the prevention of toxoplasmosis, in declining incidence. This approach allows cheaper follow-up for IgG detection of several diseases, including vaccine control. Appropriate public health measures, such as revaccination, can be properly planned and developed for avoiding outbreaks and upsurge of controlled infectious diseases.



Biography:

Dr Barbara Fialho C Sampaio, is coordinator of clinical research and Posdoctoral Researcher in the Medical School of São Paulo University. Develop innovative diagnostic research using non-invasive techniques, which aims to create possibilities for expanding diagnosis of infectious diseases. She is focused today is on the detection of measles, rubella and mumps in human saliva, such as had developed a new diagnostic technique to detect the vaccination status of children using saliva as an alternative biological fluid to blood.

Speaker Publications:

1. "Saliva collection and detection of anti- *T. gondii* antibodies of low-income school-age children as a learning strategy on hygiene, prevention and transmission of toxoplasmosis"; Institute of Tropical Medicine / 2019 / 61 (48)
2. "Measles, rubella, mumps and *Toxoplasma gondii* antibodies in saliva of vaccinated students of schools and universities in São Paulo City, Brazil"; Braz J Infect Dis / 2020 / Vol 24 (1) 51-57

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