**DETECTION OF CMV DNA ON FLOCKED SWABS (COPAN) FOR THE SCREENING OF CONGENITAL INFECTION**

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**BACKGROUND**
Screening neonates for congenital CMV infection (cCMV) enables an early detection of sequelae and a prompt inception of suitable interventions for preventing disabilities. The ease of collection and handling of neonatal samples, together with inexpensive testing methods, are key factors for screening implementation. Saliva is an accredited sample for cCMV diagnosis, which can be collected with swabs easily.

**OBJECTIVE**
To evaluate nylon flocked swabs as saliva collection devices for CMV-DNA detection in cCMV screening.

**MATERIAL & METHODS**

**PHASE 1. Determination of sensitivity threshold**

**Swabs**
Blank cotton and nylon flocked (Copan Italia S.p.a., Cat. No. 516CS01) swabs were loaded by immersion in series of 10-fold dilutions (10²⁻¹ copies/ml) of a suspension of cell grown CMV and stored at room temperature overnight without medium (dry swabs, DS).

**DNA extraction**
DNA extraction was performed on DS by means of:

- one commercial method
  - QIA - (following the manufacturer’s instructions)
  - QIAamp DNA Mini kit, QIAGEN
- two in-house methods
  - T.SHOCK - (adding 80μl of MEM) thermal shock for 45° at 72°C, fast cooling and storage at -80°C for ≥3 h
  - VORTEX - (adding 80μl of MEM) vortex for about 15''

**CMV-DNA amplification**
DNA extracted from swabs was subjected to an in-house nested-PCR amplification [1].

**RESULTS**

**PHASE 1.**
On a whole Copan DS permitted a 100-fold more pronounced recovery of CMV DNA than cotton DS. The commercial extraction method gave the best results (figure 2).

Since in-house extraction methods are both cheaper and easier than the commercial one, they were applied to saliva samples collected from children by means of Copan swabs:

**PHASE 2.**

- Positive results were obtained in 4 babies of group A and in 13 children of group B (table 1). As expected all cCMV infected children (group C) were positive.

- Examination of dry saliva swabs gave slightly better results than saliva swabs in VTM.

- Extraction with VORTEX compared with T.SHOCK method identified more positive samples (Figure 3).

**CONCLUSIONS**
Nylon flocked swabs proved to be optimal collection devices as they were able to fully collect and release CMV DNA from titered viral suspensions.

The high release capability might facilitate the exploitation of simple and cheap DNA extraction methods.

The combination of the ease of saliva collection from newborn babies with the above properties of flocked swabs should favour the implementation of newborn cCMV screening.