Urine has been proposed as an alternative biofluid for detecting and monitoring treatment of urological and systemic cancers. Urine is easily accessible, non-invasive, available in larger quantities and applicable for home collection. Moreover, the collection of urine is not limited by the health status of a patient and does not entail any risk of transmission of blood-borne pathogens. In addition, urine testing enables cost-efficient rapid and serial sampling, allowing for patient monitoring as well as reproducibility of assays. In terms of analysis, the isolation of DNA from urine is in theory easier than blood, due to the low protein content after filtration in the kidney.

Several studies have shown that the use of urine as a liquid biopsy for cancer detection and monitoring is promising due to the ease of sampling and high acceptability compared to blood and tissue. Urine cell free tumor DNA has proven to be of value in biomarker studies of bladder, kidney and prostate cancer, but surprisingly also in breast, colon and lung cancer.

**COLLI-PEE® AND RESEARCH**

To use urine for clinical applications, the preanalytical variation (collection, transport and storage) must be kept to a minimum. A standard urine cup has limitations and can be awkward, messy and inconvenient for the user. These can be overcome with Novosanis’ device, Colli-Pee®, which is a collection device that allows for standardized and volumetric collection of urine and ensures immediate mixing with preservative®. Colli-Pee® is a user-friendly method to capture first-void first-catch urine (first volume of urine flow), improving sample collection for downstream analysis. First-void urine contains a higher concentration of DNA than other fractions of urine, improving diagnostic sensitivity.

Several studies using Colli-Pee® have focused on detection of Human Papillomavirus (HPV), the leading cause of cervical cancer and the leading cause of cervical cancer. Some of the publications and results are part of large clinical studies including EVAH, Predictors5.1 and VALHUDES.

![Figure 1: Novosanis’ Colli-Pee® 20 mL variant](https://www.novosanis.com/)

**CONCLUSION**

Urine as a liquid biopsy offers a huge potential for cancer biomarker testing. Several diagnostic assays using urine are commercially available or on the verge of launch in the clinical practice. We believe urine can be considered the holy grail in cancer biomarker testing, enabling cancer detection and follow-up in a non-invasive and easy way.

*The World Health Organization (WHO) defines a biomarker as “any substance, structure or process that can be measured in the body or its products and influences or predicts the incidence of outcome or disease.”*
References:


(24) Cuzick et al, ASCCP 2019