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Comparison of the ETP-based thrombomodulin assay versus the ETP-based APC resistance assay on the ST Genesia system

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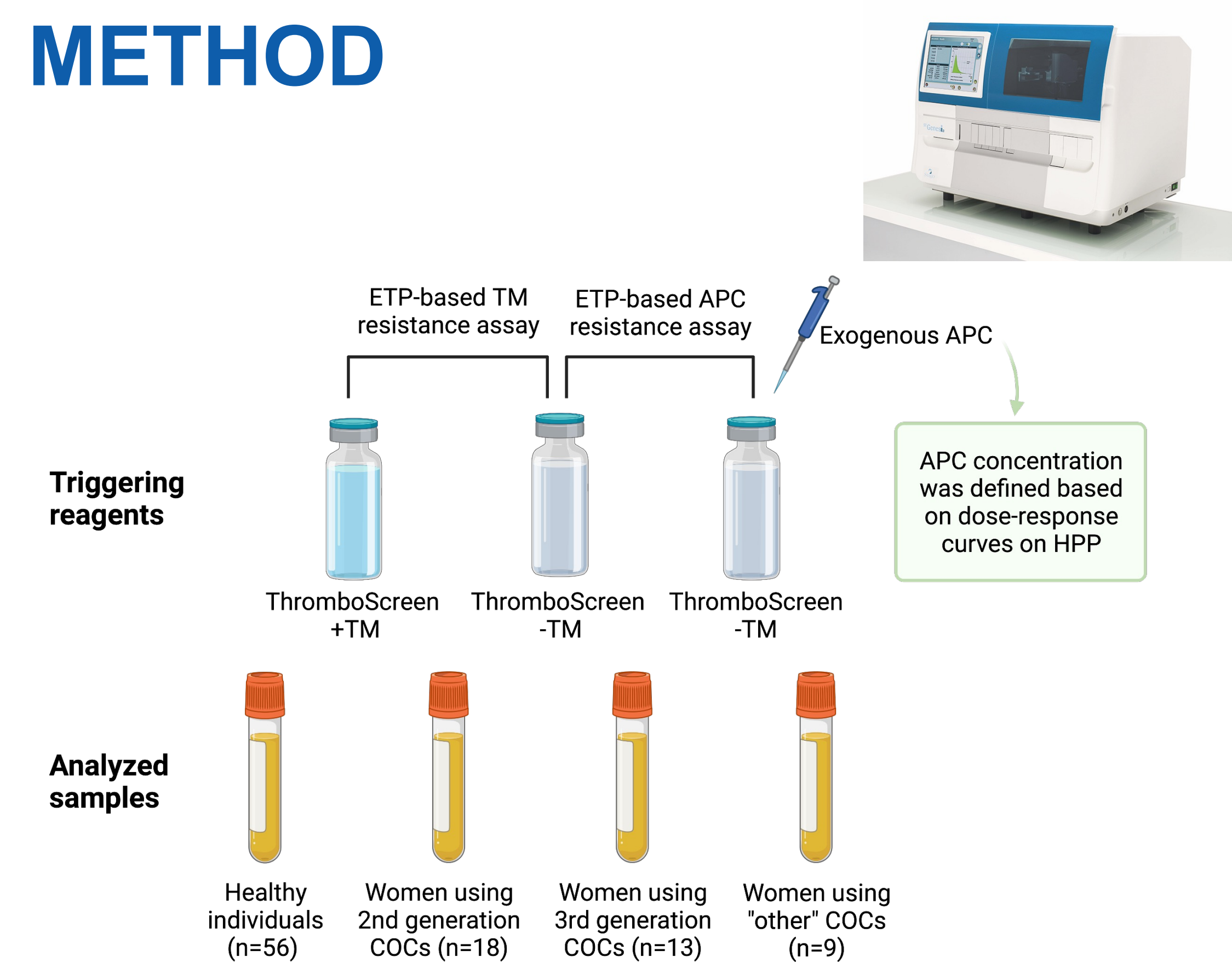
INTRODUCTION

- Activated protein C resistance (APC) resistance in women treated with combined oral contraceptives (COCs) can be measured using the endogenous thrombin potential (ETP)-based assay ideally targeting 90% ETP inhibition in healthy individuals.
- The only commercially available kit for APC resistance assessment on an automated thrombin generation platform, i.e., the ST Genesisia, is the STG-ThromboScreen kit which uses thrombomodulin (TM) and targets 50% ETP inhibition.
- Nevertheless, previous assays based on the addition of exogenous APC instead of TM are better known to assess COC-induced APC resistance.

AIM

To compare the sensitivity of the 50% ETP-based TM resistance assay versus the 90% ETP-based APC resistance assay (recently implemented) on the ST Genesisia system, in women using COCs.

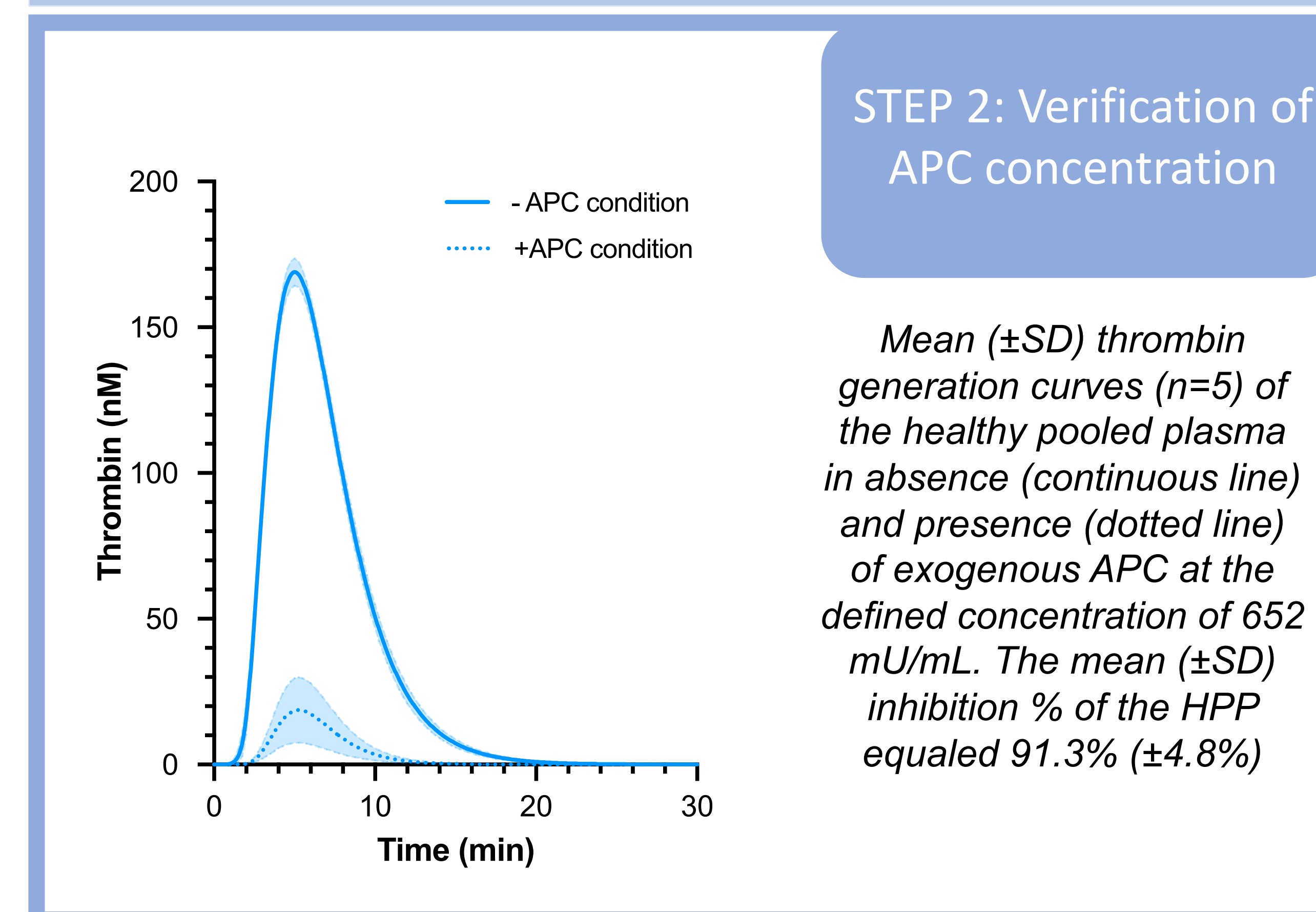
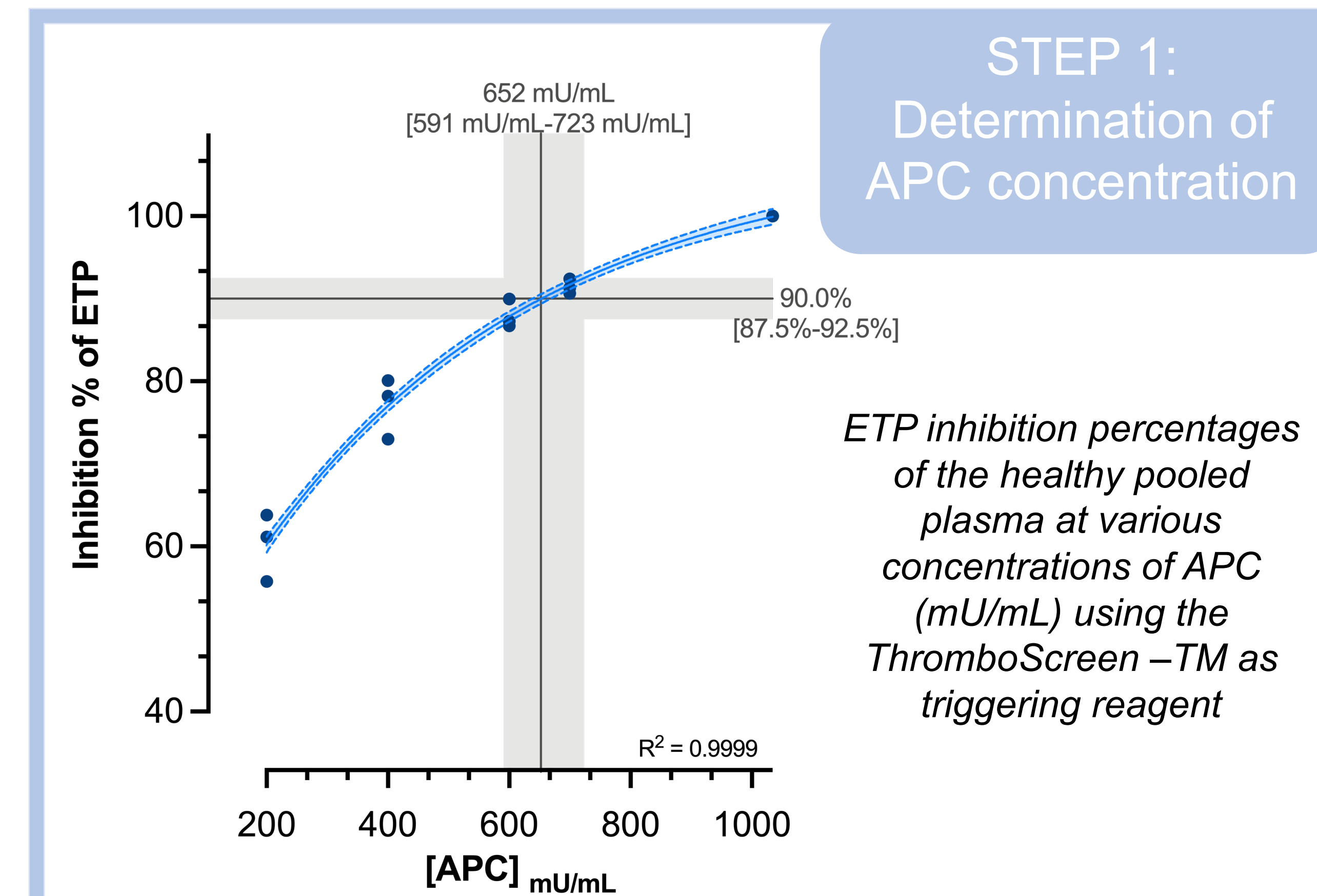
METHOD



Abbreviations

- HPP: healthy pooled plasma (composed of 10 men and 10 women not using hormonal contraception)
- Healthy individuals: men and women not using hormonal contraception
- 2nd generation COCs: combinations of ethinylestradiol (EE) and levonorgestrel
- 3rd generation COCs: combinations of EE and desogestrel or gestodene
- « other » COCs: combinations of EE and drospirenone, dienogest or cyproterone acetate

RESULTS

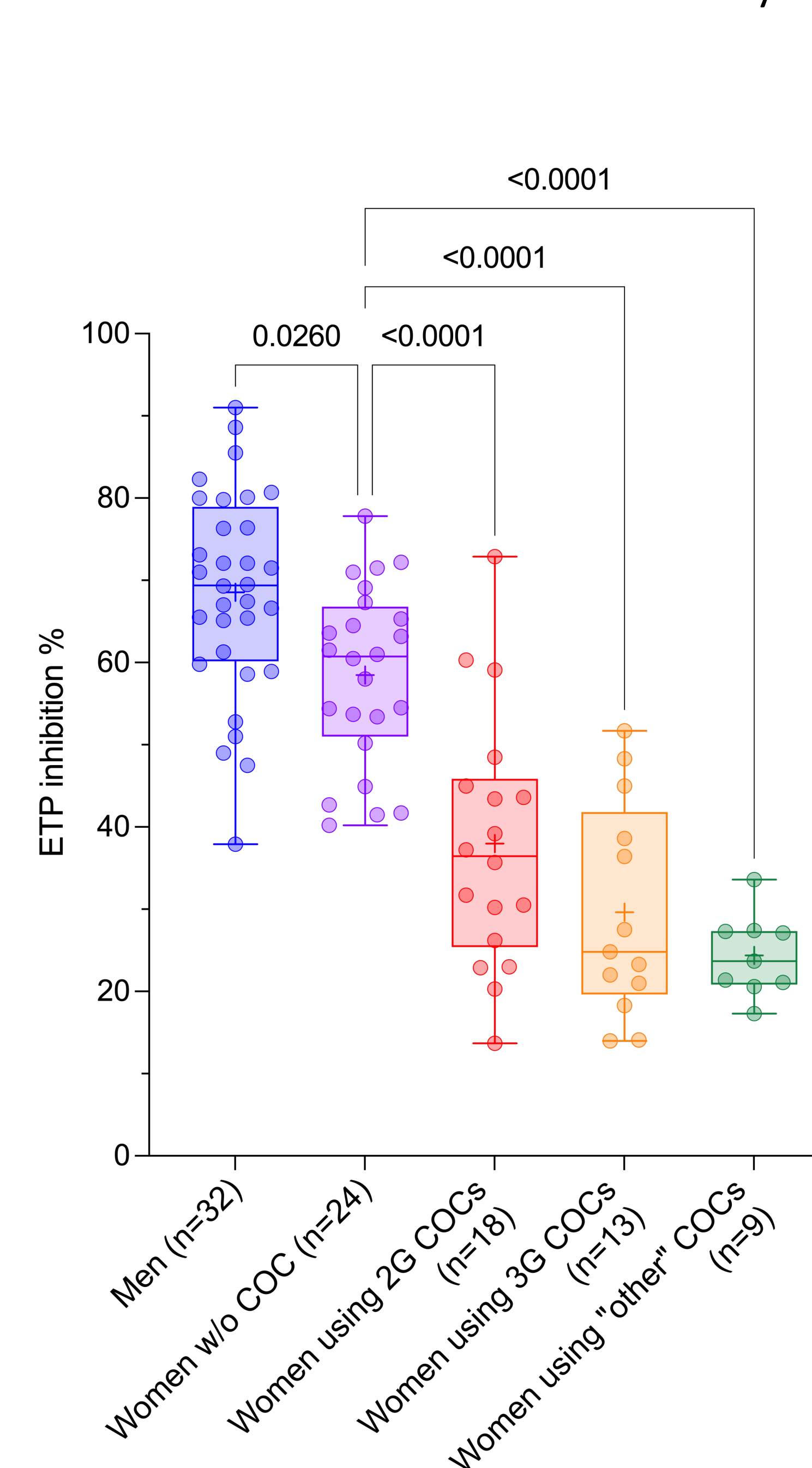


STEP 3: Comparison TM versus APC

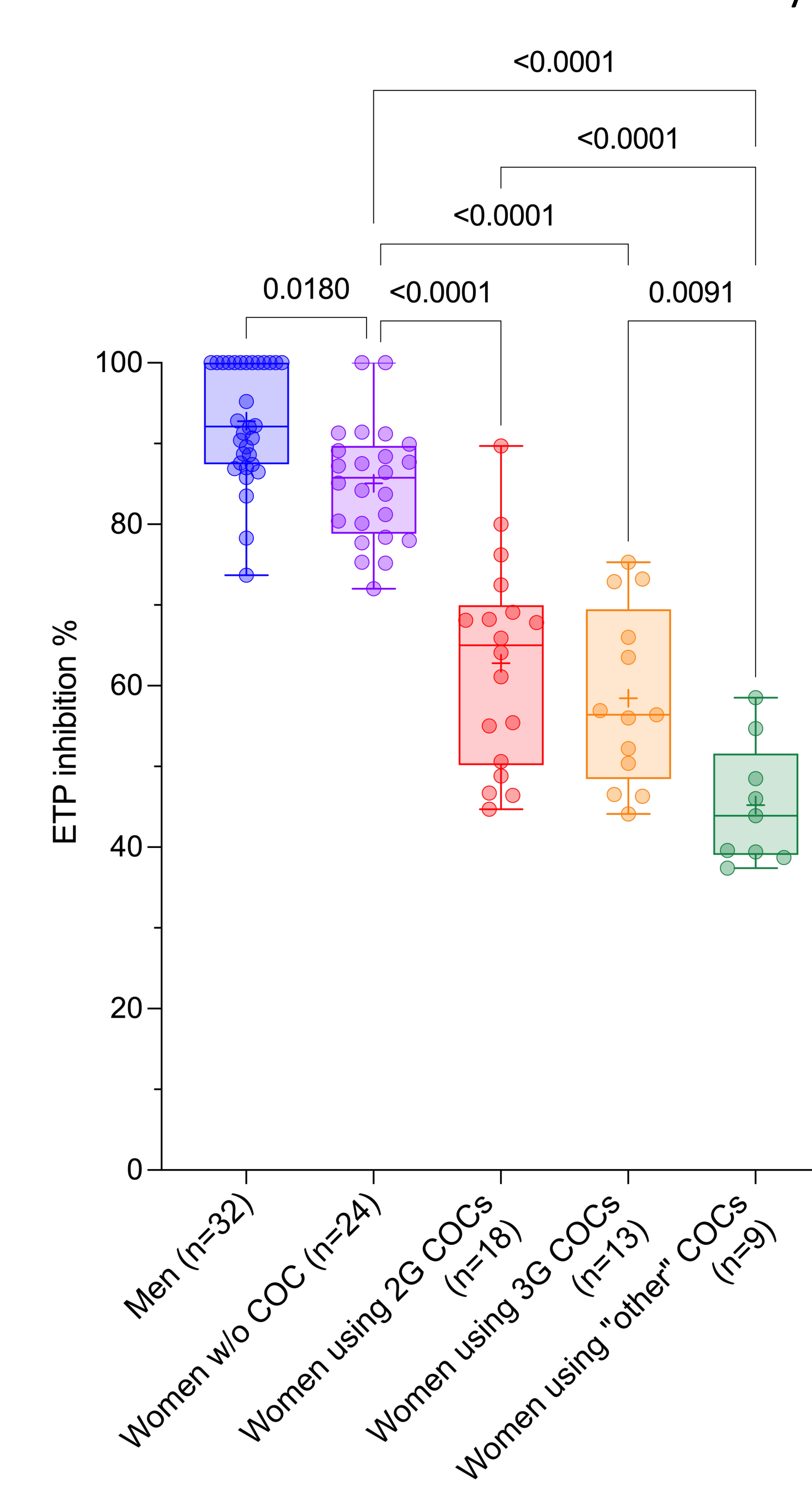
ETP inhibition percentages in presence of TM (A) or exogenous APC (B) of individuals from each subgroup, i.e., healthy individuals, women using 2nd generation COCs; women using 3rd generation COCs and women using the "other" COCs

- The median and the 25th - 75th percentiles of each subgroup are symbolized by boxes; whiskers represent minimum and maximum values. The mean value is represented by a cross.
- Differences between subgroups were assessed by an analysis of variance with Tukey's multiple comparison tests. Threshold for significance was set at 0.05.

A. ETP-based TM resistance assay



B. ETP-based APC resistance assay



CONCLUSIONS

- The 90% ETP-based APC resistance assay can better discriminate subgroups depending on COC use compared to the 50% ETP-based TM resistance assay. The ETP-based APC resistance assay is thus preferable as more sensitive to the differences of APC resistance level depending on estrogen-progestin associations found in COCs.
- Further investigations are required to confirm our results and consider the use of the 90% ETP-based APC resistance assay in clinics.

REFERENCES

Morimont L, Leclercq C, Didembourg M, De Gottal É, Carlo A, Gaspard U, et al. Analytical performance of the endogenous thrombin potential-based activated protein C resistance assay on the automated ST Genesisia system. Research and Practice in Thrombosis and Haemostasis. 2022;6(3).

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