

# Therapeutic Drug Monitoring of Tyrosine Kinase Inhibitors: Key to personalized medicine in Oncology

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## Background

- ✓ Tyrosine Kinase Inhibitors (TKIs) are increasingly used as **oral targeted therapies** in Oncology.
- ✓ The oral route leads to a **high interindividual pharmacokinetic variability**.
- ✓ To improve efficacy and/or reduce toxicity, **Therapeutic Drug Monitoring (TDM)** can be used to adapt doses and personalize treatments.

## Design

- Retrospective study
- **January 2018 to October 2018** including patients treated for solid tumors with TKIs
- Blood samples were collected and analyzed to determine TKIs **trough plasma concentrations**
- **3 to 15 days** after administration depending on the TKI (necessary time to reach targeted steady state).

## Aim of study

To assess the potential impact of TDM on clinical decision in patients treated with TKIs

## Evaluated criteria

Patients' plasma exposure  
Therapeutic approach  
Tolerance  
Progression if applicable

## Results/ Discussion

73 Blood samples  
45 Patients

61.6%

### Anti-EGFR drugs

Afatinib  
Osimertinib  
Gefitinib  
Erlotinib



21,9%

### Anti-CDK4/6 drug

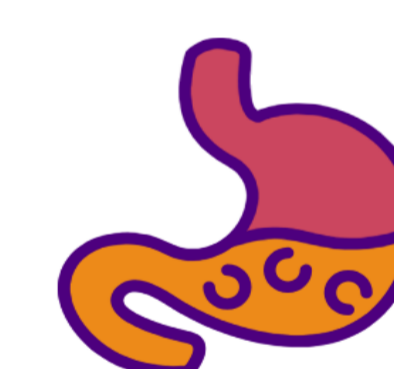
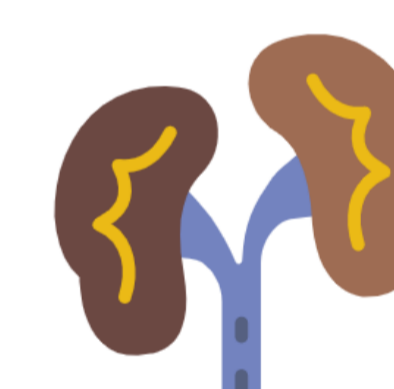
Palbociclib



16.4%

### Anti-VEGFR drugs

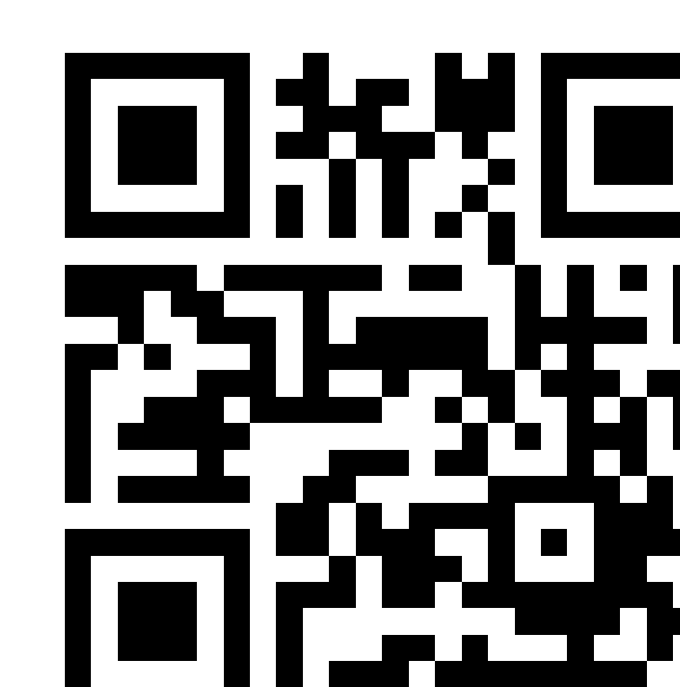
Cabozantinib  
Nintédanib  
Pazopanib  
Regorafenib  
Sunitinib



Plasma trough concentration	Infratherapeutic concentrations	Therapeutic concentrations	Supratherapeutic concentrations
	26% (19/39)	62% (44/73)	12% (9/73)
Therapeutic approach	<b>47%</b> (9/19) : treatments pursuit without any modification <b>30%</b> (6/19) : change of drug	<b>72%</b> (32/44) : treatments pursuit and 2 with dosage adjustment <b>22%</b> (10/44) : change of drug	<b>78%</b> (7/9) : dose reduction <b>22%</b> (2/9) : stop of the treatment
Tolerance	Well tolerated 2 patients : 1-2 toxicity's grade	7 patients : adverses effects	4 patients : 1-2 toxicity's grade

## Conclusion

- TDM could help in daily clinical decision along with other clinical data.
- TDM helped us:
  - ✓ To detect supratherapeutic exposure and reduce toxicity,
  - ✓ Uncover drug interactions
  - ✓ Optimize patient management to improve clinical outcomes.



<http://www.eahp.eu/24-4CPS-186>

### References

1. PMID: 24878063 2. PMID: 27446421 3. PMID: 24041628