

## Abstract

### A Team Approach in CRO for Effective Execution of Analytical Method Development and Validation

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**Purpose.** Sponsors are looking for contract research organizations that can provide quality work with fast turn-around times., As a CRO, the effective allocation of resources to meet tight timelines, particularly for method development and validation activities becomes very challenging. BASi formed a team from the Pharmaceutical Analysis Group to specialize in HPLC method development and validation. **Methods.** The team is headed by a Ph.D. senior scientist and consists of a MS chemist and three BS analysts. The senior scientist is responsible for communicating with the sponsor and oversees technical aspects. Each analyst multi-tasks, engaging in method development and/or method validation as assigned. The team meets daily to discuss issues found in method development and validation, develop approaches to do troubleshooting, review the progress of each project, and assign tasks. **Results.** According to a well-planned schedule, each team member performs his/her task. These may be from different stages of a project or from several unrelated projects, hence everyone's time is fully utilized. A typical method development and validation project including QAU review for a HPLC potency method can be completed in three weeks. With each team member involved in a different stage of the project, the overall manpower for such a project is approximately 20 mandays. With this team setting, we were able to develop and validate 14 HPLC methods for 14 drug compounds in 18 vehicles within one year period, plus perform sample analyses after method validation was accomplished. **Conclusions.** With a dedicated method development and validation team, a well-planned schedule for each team member, and direct communications between the team leader and sponsors, we were able to meet our sponsors' deadlines in an efficient and expedient fashion, without sacrificing quality.

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# OBJECTIVES

Explore an effective way to conduct method development and validation in a contract research organization that maximizes resource allocation and provides quality work with fast turn-around time.

**METHODOLOGY**

# TEAM RESPONSIBILITIES

## Senior Scientist

- Technical oversight of all projects
- Timely client communication regarding project status
- Communication to team for scheduling, technical advice
- Develop method development plan and validation protocol

# TEAM RESPONSIBILITIES

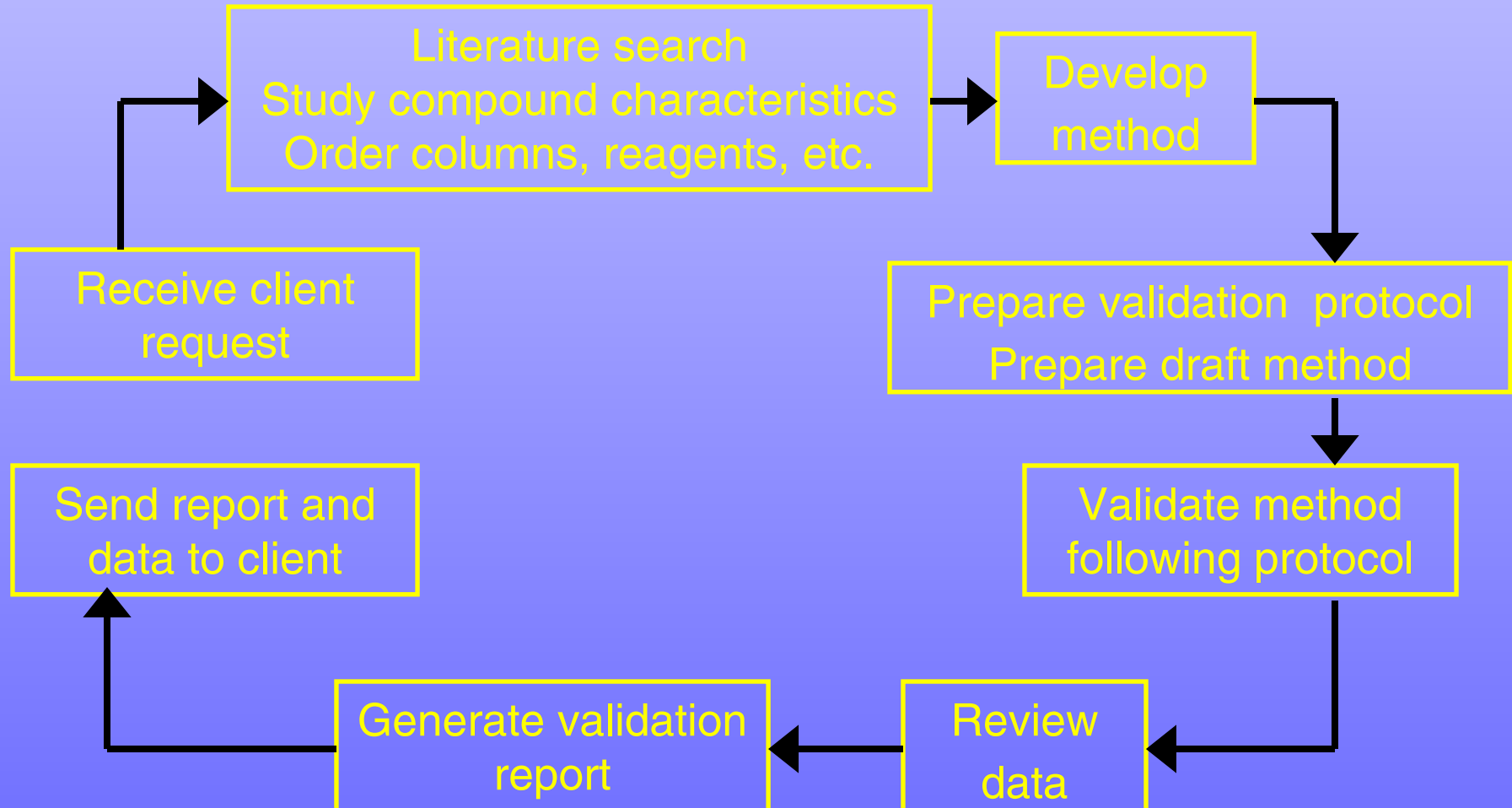
## Analysts

- Execution of method development experiments
- Execution of method validation protocol
- Data analysis

## Quality Assurance

- Review protocols, data, method and reports

# STEPS FOR METHOD DEVELOPMENT & METHOD VALIDATION PROCESS



# METHOD DEVELOPMENT AND VALIDATION TEAM

1 Senior Analytical Scientist: Ph.D.

1 Analyst II: M.S. Chemist

2 Analyst I: B.S. Chemist

1 QAU Auditor: working quarter time

# DETAILS OF TEAM RESPONSIBILITY

Tasks	Ph.D. Senior Analytical Scientist	Analyst II M.S. Chemist	Analyst I B.S. Analyst	QAU Auditor
Client Contact	X			
Information study (pre-method development)	X	X		
Material requisition	X	X	X	
Method development / trouble-shooting	X	X	X	
Validation Protocol generation / review	X			X
Method validation – Laboratory work		X	X	
Method validation – Data review	X	X		X
Validation report generation/review	X			X

# TYPICAL METHOD DEVELOPMENT STEPS

- Literature search / compound information study
- UV-VIS spectrometric analysis on analytes
- Sample preparation procedure
- Selection of HPLC parameters
  - wavelength
  - column
  - mobile phase composition
  - flow rate
  - temperature
- Optimization of final HPLC parameters
  - mobile phase organic content
  - column temperature

# TYPICAL METHOD VALIDATION EXPERIMENTS

Specificity

Linearity / Range

Accuracy / Recovery

Instrument precision / method precision

Intermediate precision

Solution stability

Robustness

LOD / LOQ (purity method)

Filter evaluation (if applicable)

# RESULTS

## Senior Scientist

Combined responsibilities of team management, technical supervision and client contact ensure quick resolutions to any issues occurred during method development and validation.

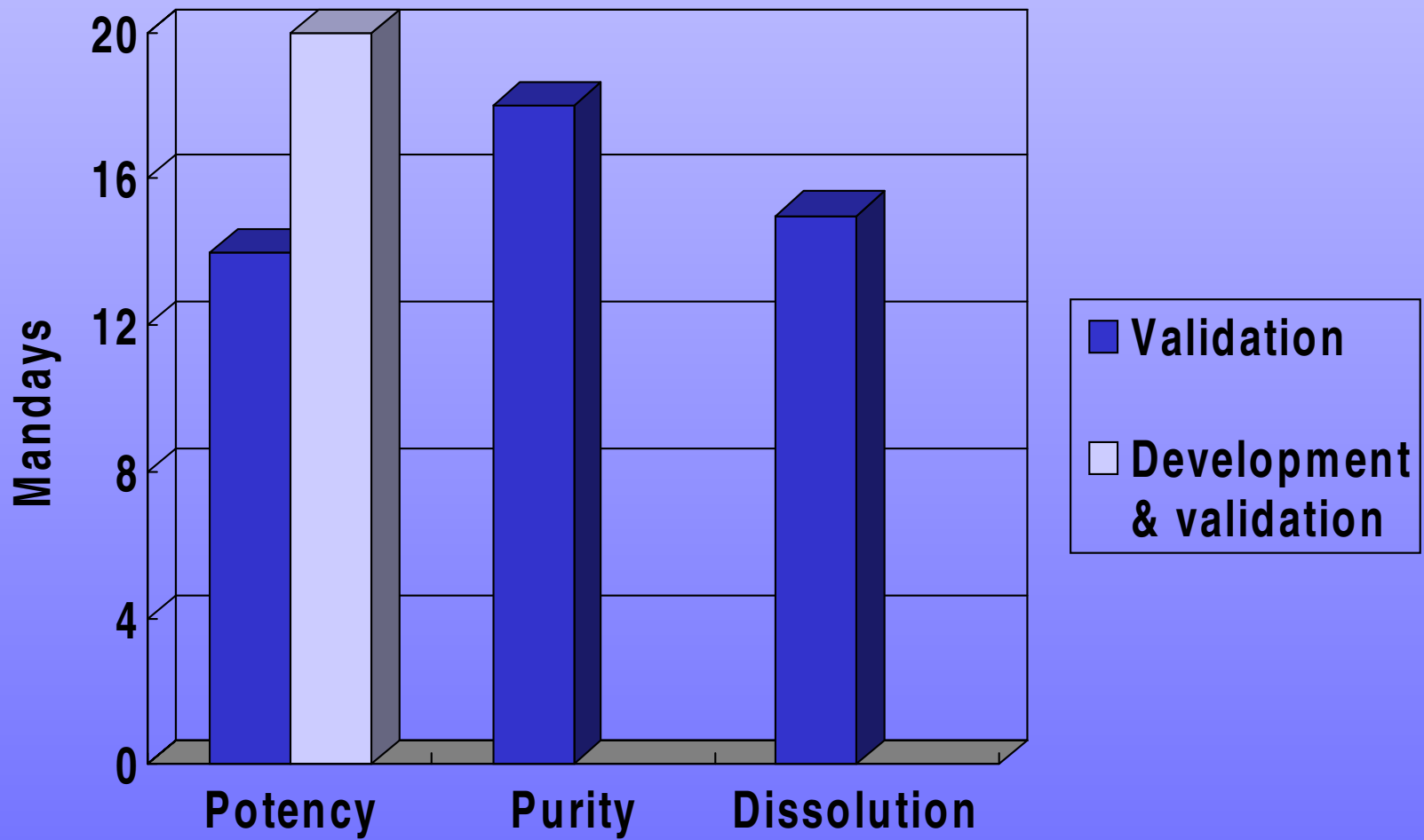
## M.S. Chemist

Versatile ability on performing almost all kinds of tasks ascertains smooth operations between projects.

## B.S. Analyst

Flexibility on multi-tasking makes fast turn-around and high throughput possible.

	1 <sup>st</sup> Week	2 <sup>nd</sup> Week	3 <sup>rd</sup> Week	4 <sup>th</sup> Week
Information review	█			
Material requisition	█			
Method development		█		
Protocol preparation		█		
Draft method creation		█		
Method validation			█	█
Data review			█	█
Report generation				█
QAU review				█
Data package to client				█



Fourteen HPLC methods for 14 drug compounds in 18 placebos / vehicles were developed and validated, followed by sample analyses with a team of 4 full time equivalent employees within one year period.

**CONCLUSIONS**

The method development and validation can be executed in an efficient and expedient fashion without sacrificing quality by

- dedicating a team of scientists to the task.
- maintaining excellent communication with clients.