Standardized Flow Chart for screening *mcr*-positive *E. coli* and *Salmonella* in animal caecal content and meat samples

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Multicentre Evaluation Of Culture Based Methods To Selectively Isolate Colistin-resistant *Enterobacteriaceae* From Food Producing Animals And Food Products

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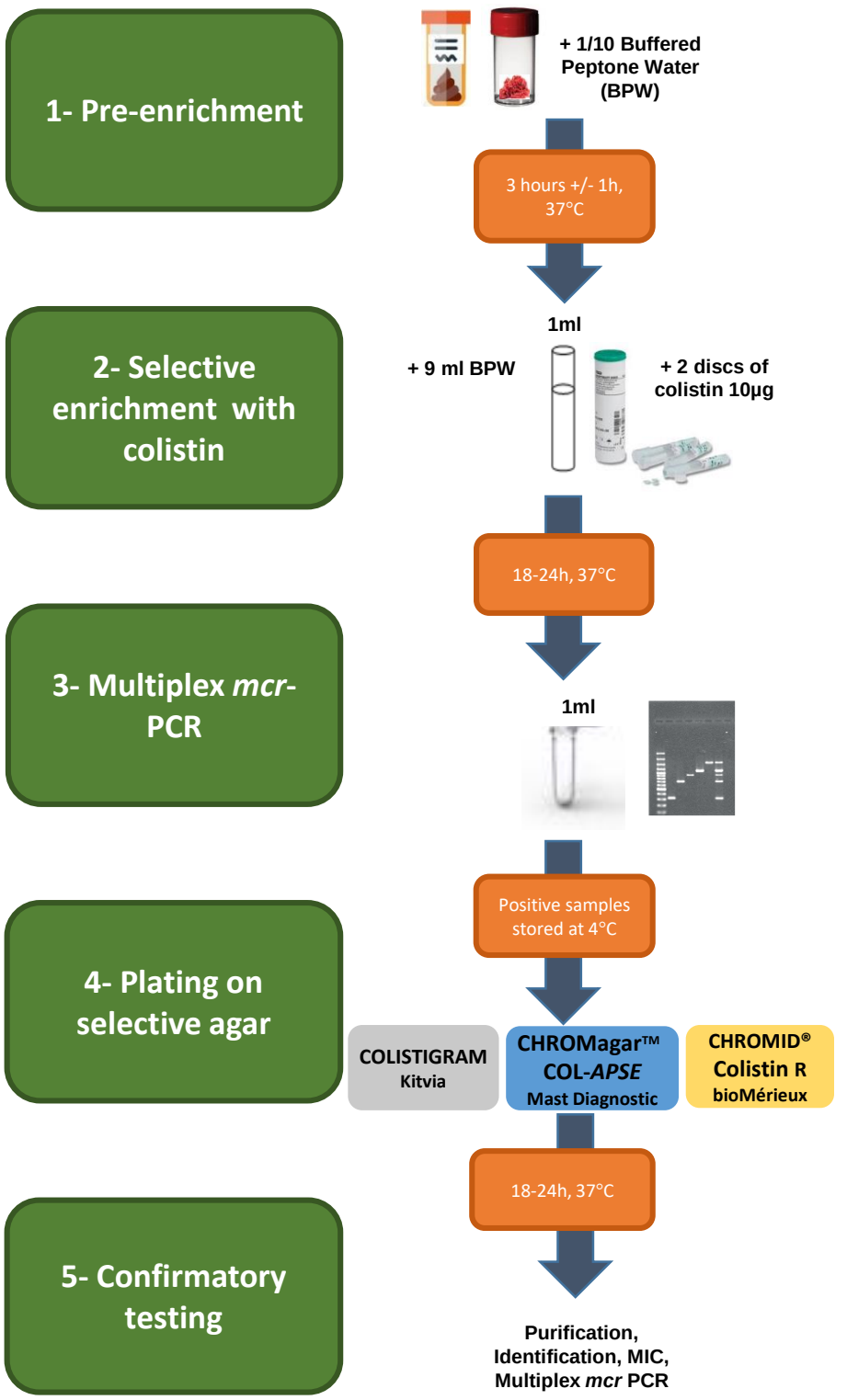
Background: Colistin is considered as a highest priority critically important antimicrobial in human medicine. To evaluate the potential contribution of food-producing animals to colistin resistance in humans, **WP1** of the **OHEJP-IMPART** project aimed to standardize a methodology to **screen acquired-colistin resistance** in most frequent commensal and zoonotic *Enterobacteriaceae* as *E. coli* and *Salmonella* and evaluate this methodology in a **multicentre approach**.

Method: Panel composition provided to the participants is detailed in the table below and methodology to be applied is detailed in the Flow chart.

	Sample / Matrix	Spiked species		
		mcr gene	Bacterial species	Colistin MIC (mg/L)
1	Pig caecal content	-	-	-
2	Pig caecal content	*mcr-1*	*E. coli*	4
3	Pig caecal content	*mcr-3*	*E. coli*	4
4	Turkey meat	-	-	-
5	Turkey meat	*mcr-4*	*Salmonella* 4,12:I	4
6	Turkey meat	*mcr-5*	*Salmonella* Schwarzengrund	8

Results: Twelve laboratories participated in the multicentre evaluation. The **specificity** and the **sensitivity** of the **PCR** were **100%** and **83%** respectively. In PCR-positive samples, the probability of selectively isolating a *mcr*-positive colistin-resistant *E. coli* or *Salmonella* was greater using **CHROMID® Colistin R (86%)** than **CHROMagar™ COL-APSE (75%)** and **COLISTIGRAM (70%).**

Conclusions: Including a **pre-screening PCR** will save time and reduce costs due to discarding negative samples and **focusing only on positive** ones. The performance of the method was highly influenced by which **selective agar** used and which *mcr*-producing isolate was present in the sample. Further trials including a broader range of colistin-resistant strains and a larger panel of matrices would assess the robustness of the method.



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