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PHARM023: Analysis of Palladium in Pharmaceutical Raw Materials

Introduction

Organic synthesis reactions utilizing palladium catalysts are often used in the drug manufacturing process. In order to use the synthesized substance as a drug, the catalyst used must be removed. X-ray fluorescence analysis does not require any acid treatment and allows measurement in the drug's original state. This makes it possible to evaluate the efficiency of catalyst metal removal and recovery by directly measuring the sample without acid treatment, using X-ray fluorescence analysis.

Elemental analysis

Analysis:	Active pharmaceutical ingredients
Use:	Manufacturing (Production)
Analyzed materials:	Active pharmaceutical ingredients
Analysis method:	Standardless FP method



Sample amount 1 00 mg

Figure 1: Sample preparation

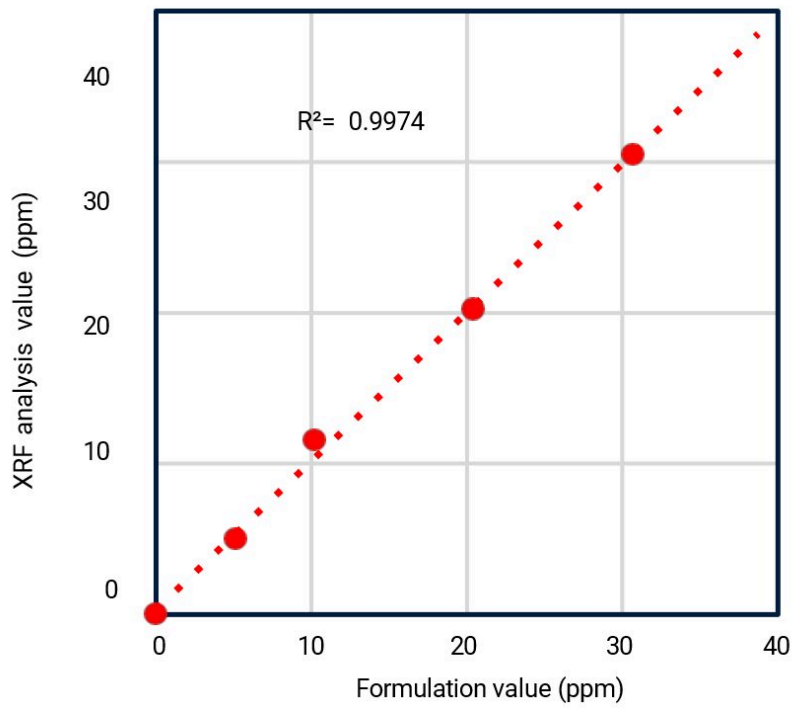


Figure 2: Correlation between Pd content and XRF analysis value

Table 1: Results of 10 replicate analyses of Pd-containing samples

Measurement No.	Pd concentration (ppm)
1	11.9
2	11.9
3	12.7
4	11.9
5	12.1
6	11.2
7	10.5
8	12.5
9	9.3
10	10.9
Average	11.5
Standard deviation	1.0

Conclusion

A powder sample (100 mg) was placed in the sample container. Samples with prepared specific Pd content were measured using the FP application without standard samples, showing good correlation with the Pd content. The results of 10 repeated measurements of the same sample (Pd content 10 ppm) showed a standard deviation of 1.0 ppm, indicating that good measurement reproducibility was obtained even with small amounts of sample.

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