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Vitamin D Assays In Clinical Laboratory: Past, Present And Future Challenges

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Highlights

1. **The future of analytical measurement of vitamin D will depend on separation steps**
2. **Effort to Standardization vitamin D assay**
3. **Guidelines for testing of Vitamin D stated that no practical reason for most people to get a vitamin D test**

Abstract:

Vitamin D status is usually assessed by measuring the serum 25-hydroxyvitamin D (25(OH)D) concentration. There has been a dramatic increase in 25-OHD requests over recent years prompting many laboratories to consider the use of automated immunoassays. In this presentation, we will discuss and compare the two major techniques that are used for measuring of vitamin D (the binding assay and chemical assay techniques).

Chemiluminescence immunoassays (CLIA), radioimmunoassay (RIA), and binding protein assay are belonging to the binding assay, while the chemical assay includes high performance liquid chromatography (HPLC) and liquid chromatography-tandem mass spectrometry (LC-MS/MS). Significant differences in the 25(OH)D determination were observed between various assays. Standardization and harmonization of 25(OH)D measurements are therefore urgently needed. The widespread introduction of well standardized assays in clinical laboratories is the challenge in the next years.

Keywords: Vitamin D, CLIA, RIA, HPLC, Competitive-Protein Binding Assay.

Dramatic increase in vitamin D testing:

Rickets was first described in the 17th century as outbreak in England. Following that Vitamin D was recognized as a very important component of the diet related to development of rickets and other bone diseases. Presently, rickets has been almost eradicated from most developed countries; however is still a very common problem in areas of the world where food is scarce.

The recent dramatic increase in vitamin D testing is primarily due to two causes: First, there has been a marked increase in vitamin D deficiency throughout the world. The second reason for that increase is the use of vitamin D as general health marker and the link between vitamin D deficiency and several diseases.

Metabolism:

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