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Copper as diagnostic marker of cancers

Abstract

The study was conducted to determine (i) if serum copper level could be a useful marker for selection for control examinations and (ii) if serum copper level is a risk factor in developing cancer.

Copper was quantitatively measured in diluted serum samples by inductively coupled plasma mass spectrometry (ICP-MS) using mass spectrometer (Elan DRC-e, PerkinElmer) in standard mode.

In our study, there were two independent group of patients examined. In the first, retrospective model, there were patients diagnosed with prostate cancer (n=166) and laryngeal cancer (n=123) matched with healthy controls. This study showed that serum copper level above 1250 µg/l may be a useful marker for laryngeal examination, but is not a useful marker for prostate cancer early detection. In the second, prospective model, there were patents diagnosed with breast cancer (n=42) matched with unaffected controls. Serum from breast cancer patients was collected 3 – 41 months before cancer diagnosis. This part of study showed that there is a tendency that breast cancer risk is about two times lower when copper serum level is in range between 1035 – 1311 µg/l. Further investigations are needed.