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(54) **Title:** METHOD OF OPTIMIZING THE TREATMENT OF PHILADELPHIA-POSITIVE LEUKEMIA WITH ABL TYROSINE KINASE INHIBITORS

(57) **Abstract:** The present invention provides a method of treating Philadelphia positive (Ph+) leukemia, such as Philadelphia chromosome positive acute lymphoblastic leukemia (Ph+ ALL) or chronic myeloid leukemia (CML), in a human patient population comprising the steps of (a) administering a predetermined fixed amount of a Bcr-Abl tyrosine kinase inhibitor, such as Imatinib, or a pharmaceutically acceptable salt thereof to human patients suffering from a Ph+ leukemia, (b) collecting at least one blood sample from said patients, (c) determining the plasma trough level (Cmin) of the Bcr-Abl tyrosine kinase inhibitor or of a metabolite thereof as well as the MMR rates, (d) assessing a discrimination potential of trough plasma concentrations for MMR and identifying a Cmin threshold for optimal sensitivity and specificity and (e) adjusting the dose of the inhibitor of the Bcr-Abl tyrosine kinase or a pharmaceutically acceptable salt thereof applied to the individual patients from said patient population and, optionally, future patients suffering from a Ph+ leukemia in a manner that a Cmin is achieved in each single patient equal to or higher than the Cmin threshold obtained under step (d).

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