

## **2.Summary**

### **Introduction**

Colorectal carcinoma presents a serious problem in the Czech Republic; its incidence is on the increase and - according to some statistics - takes first place among developed countries worldwide. Therefore, it is advised to incorporate examinational and therapeutic algorithms with new modalities that will lead to early diagnostics or to a change in existing therapeutic procedures.

### **Characterization of K-ras mutation**

K-ras mutation belongs to the family of proto-oncogenes where a gene not having undergone mutation expresses proteins that regulate mitosis. Mutation cancels the regulatory function of these proteins, thus leading to the development of tumors, especially carcinoma of the lungs, pancreas, and colorectum.

### **Project objective**

The main objective of the project is to prove K-ras mutation in tumors of the colorectum; to detect tumor cells with K-ras mutation in peripheral blood; to detect K-ras mutation in liver metastases; and to verify the hypothesis claiming that tumors with K-ras mutation have a worse prognosis and often lead to dissemination, mainly to the liver.

### **Methodology and collection of data**

The whole project is tied to an IGA grant and runs according to the strict rules of the protocol applied at the Surgical Clinic of the Pardubice Hospital, with its diagnostic part - PCR analysis – being completed at the Biochemical Diagnostic Institute (UKBD) of the Teaching Hospital in Hradec Králové.

### **Results**

The project has been running since June, 2004 to December 2006. 78 patients meeting defined parameters have been included in the file to date. K-ras mutation has been detected in the tumor tissue of 25 patients (32,05%). K-ras mutation hasn't been detected in the blood

### **Discussion**

Genetical analysis of a specific tumor has not yet become a standard part of the examinational and therapeutic algorithm. If an assumption of a worse course of illness and metastasizing - especially to the liver – has been proven, the examination of K-ras mutation in patients suffering from colorectal carcinoma should lead to the adjustment of their treatment and postoperative dispensarization, or the administration of chemotherapy and radiotherapy at stages when these modalities are not normally applied.

**Key words:** Colorectal carcinoma, K-ras mutation, PCR analysis, venous drainage of the tumor, detection of tumor cells in peripheral blood