TITLE:

Determination of neopterin and its derivates by HPLC with fluorescence detection

SUMMARY:

Neopterin, a pteridine derivative, is produced in human organism by monocytes or by B - lymphocytes stimulated with interferon γ or interleukine – 2. These active substances (interferon γ, interleukine – 2) are connected with immune system activation. Neopterin measurement in body fluids can therefore serve for monitoring of activation of various components of immune system induced by cytokines. Immune activation occurs for example during many infectious diseases, autoimmune diseases and malignant diseases. Recently the connection between neopterin and 7,8 – dihydroneopterin and intracellular oxidative stress and cell apoptosis was demonstrated in several scientific studies. Values of pteridines probably correlate with certain neurological disesases. Totally reduced form of biopterin serves as cofactor of some enzymes in human organism. In clinical practice the concentration of neopterin, eventually other related substances is expressed as the ratio neopterin / creatinine. This diploma thesis is dealing with the development of an analytical method for the determination of biologically active substances biopterin, 7,8 – dihydroneopterin, 5,6,7,8 – tetrahydroneopterin, neopterin and creatinine by high performance liquid chromatography connected to fluorescence, respectively UV detection in case of creatinine.

KEYWORDS:

Biopterin, 7,8 – dihydroneopterin, 5,6,7,8 – tetrahydroneopterin, neopterin, creatinine, HPLC, HILIC