INTRODUCTION

Lignin represents the resistant component to biological attack and also grants mechanical resistance to the wood. Lately, one may notice constant interest regarding finding solutions for increasing the resistance of wooden products towards destructive agents, through methods that are acceptable from a viewpoint of compatibility with the environment.

It is known that “products of secondary metabolism of plants”, namely lignin and polyphenols, are included in the defense mechanisms that plants have developed against pathogenic or non-pathogenic microorganisms.

On the other hand, the aforementioned compounds may result as subproducts of the industry of chemical treated wood or from technologies of complex biomass capitalization. On this direction, interaction between birch veneer and a series of biocidal compounds has been studied (Ungureanu E. et al., 2007, 2008; Căpraru A. M., 2010). 

Chemical active aqueous agents are known whose efficiency is due to the presence of copper. Part of the copper ions is fixed in the wood substratum by hydroxyl or carboxylic ionized groups in the wood at high pH.

EXPERIMENTAL

RESULTS AND DISCUSSIONS

The data presented in figure 1 and 2 refer to treatments with Protobind 1000 modified lignin, modified and their complexes with copper ions.

Fig. 1 - Variation of retention degree of Pb1000 lignin unmodified/hydroxymetilated and their complexes with copper ions depending on the elution duration

Fig. 2 - Variation of retention degree of Pb1000 lignin unmodified/hydroxymetilated and their complexes with copper ions depending on the elution duration

The toxicity of elution products is insignificant in the case of products eluted after 72 and 96 hours, and seed germination reaches 100% in most cases. The best percentage has been achieved at solutions resulted from elution of test tubes that were treated with hydroxymethyalted lignin’s and copper based compounds, where the germination capacity presents values above 70% from the first solutions resulted after 48 hours.

CONCLUSIONS

The stability of treatments that were performed with modified lignin’s and their complexes with copper ions was kept track of by successive elution with water of the wooden support impregnated with the aforementioned chemical species and it was concluded that the retention level is influenced by the nature of the products, by their functionality and their complex degree.

By UV/VIS spectrophotometry, there was observed a direct correlation between the absorption of elution products and the retention degree. Significant draining of treatment agents is encountered during the first 24 hours, and then there are no more important losses.

The germination capacity of tomato seeds in the presence of solutions resulted from successive water extraction of wooden support treated with products with potentially biocidal action does not highlight any significant toxic effects; hence the existence of the premise of achieving biocide systems compatible with the environment.