Cytoprotective effect of silybin against lasalocid-induced toxicity in HepG2 cells

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Abstract

Lasalocid is an ionophore coccidiostatic agent frequently used in poultry. Its extensive use causes the formation of residues in edible tissues and eggs which may pose a risk to consumers. Silybin is the main compound extracted from the herb milk thistle *Silybum marianum* and its hepatoprotective effect has been reported in literature.

The aim of the study was to compare lasalocid and silybin cytotoxic effects followed by their combined use in HepG2 cell line. A cytoprotective effect resulting from the interaction of both pharmacologically active substances was measured.

In this study, an MTT test, coomassie brilliant blue binding test, and LDH release test determined the effective concentration (EC₅₀) of the compounds. The isobolograms and combination index were used to assess the nature of interaction.

The lowest EC₅₀-value for lasalocid was established via the MTT test. This study revealed a lack of silybin cytotoxic effect on the cells. Co-actions of the two drugs led to a significant decrease of lasalocid cytotoxicity. The isobolograms and combination index showed a remarkable antagonistic effect in the course of silybin and lasalocid interaction.

The results indicate that silybin revealed a cytoprotective effect when incubated with lasalocid since its cytotoxic impact on HepG2 cells has been significantly diminished.

Key words: silybin, lasalocid, cytotoxicity, protection, HepG2 cells

Introduction

Lasalocid belongs to ionophoric antibiotics, a group of chemotherapeutic agents used in veterinary practice for protection against gastrointestinal parasites (coccidiosis, caused by *Eimeria* sp.). These antibiotics are characterized by a narrow margin of safety, therefore they are not used in medicine because of their high toxicity to humans. Accidental cases of ionophore poisoning of people have been reported (Safran et al. 1993, Kouyoumdjian et al. 2001).
In addition, concern of public health is involved due to lasalocid residues in excessive permissible concentrations revealed by monitoring of eggs and edible