

# **Effects of Long-term Use of Polyphenols on the Absorption and Tissue Distribution of Orally Administered Metformin and Atenolol in Rats**

## **Abstract**

**Aim:** To evaluate the effect of long-term use of silibinin, epigallocatechin (EGCG), quercetin and rutin on the absorption and tissue distribution of metformin and atenolol. **Materials and Methods:** Thirty male rats were used, allocated into 5 groups and treated as follow: 1st group treated with olive oil and served as control; the other 4 groups were treated with either silibinin, EPGC, quercetin or rutin, administered orally as oily solutions for 30 days. At day 30, a 300mg/kg metformin and 50mg/kg atenolol were administered orally; 3.0 hrs later, the animals were sacrificed and blood samples, tissues of brain, kidney and liver were obtained for evaluation of the drugs level. **Results:** The polyphenols increased both serum and tissue levels of metformin compared with controls. This effect was relatively varied according to the structural differences among flavonoids. **Conclusion:** Long-term administration of silibinin, EGCG, quercetin or rutin increase oral absorption and tissue distribution of metformin, while atenolol was not affected; the effects of the studied polyphenols varied in accordance with the variations in their structural formulas.