

THE POSSIBILITIES OF METFORMIN COMBINING WITH THE HERBAL PREPARATIONS ON THE MODELS OF DIABETES MELLITUS (LITERATURE REVIEW)

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Introduction. The new approaches of combined treatment of diabetes mellitus and metabolic syndrome are necessary. Herbal drugs may stipulate polytropic favourable effects simultaneously influencing on several pathological pathways. Phytotherapy in the most cases is supplementary method, but it may increase the efficacy of known antihyperglycemic drugs. Still the verified data about efficacy and safety of such combinations are limited, and it is rational to summarize them.

Objects. Medline and elibrary.ru were searched up to January 2015. The search terms were 'metformin', 'herbal medicine', 'medicinal plant.' The search subsequently was extended.

Results. It has been found that several herbal preparations increase efficacy of metformin on the model of alloxan-induced diabetes (it should be emphasized that there is strong evidence of meformin efficacy on this model). These preparations include ethanol extract of *Carica papaya* L. (Caricaceae) leaves (at doses of 5 and 10 mg/kg), methanol extract of *Catharanthus roseus* L. (Apocynaceae) leaves (at a dose of 250 mg/kg), water extract of *Terminalia chebula* Retz (Combretaceae) fruits (at a dose of 500 mg/kg), while water extract of *Cinnamomum cassia* Nees ex Blume (Lauraceae) does not influence on hypoglycemic effect of metformin.

The ability to increase metformin efficacy under the conditions of streptozotocine-induced diabetes has been proved for fruit juice of *Momordica charantia* L. (Cucurbitaceae, at a dose of 20 ml/kg), extract of *Allium sativum* L. (Alliaceae, at a dose of 500 mg/kg), ethanol extract of *Scutellaria baicalensis* L. (Lamiaceae) roots (at a dose of 400 mg/kg), while ethanol extract of *Rehmannia glutinosa* (Scrophulariaceae) does not increase hypoglycemic effect of metformin on this model, still it enhances the reduction in plasma C-reactive protein level.

Conclusion. Data available in literature show that herbal preparations are able to significantly increase the hypoglycemic effect of metformin on the models of alloxan-induced and streptozotocine-induced diabetes. Thus, there are prospects of success in the search and further studies of combinations of known antihyperglycemic drugs with herbal preparations. Further research is needed to establish the mechanisms of action and biopharmaceutical factors.