

**STUDY OF THE HYPOAZOTEMIC ACTIVITY OF INDIVIDUAL
FLAVONOIDS AND SAPONINS ISOLATED FROM *Tribulus terrestris* MEAL**

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A hypoazotemic agent (provisionally named Triburenal), based on biologically active substances isolated from *Tribulus terrestris* meal after five successive extractions with 70% ethanol, was developed at the Institute of Chemistry of Plant Substances. In this study, the chemical composition of *Tribulus terrestris* meal was investigated, and the hypoazotemic activity of the isolated individual compounds was evaluated.

Tribulus terrestris meal obtained after five successive extractions with 70% ethanol was investigated. The extract obtained using 40% ethanol at 60°C was fractionated with butanol. Ten compounds were isolated from the butanol fraction: uracil, thymine, N-trans-n-caffeoyl tyramine, quercetin, isoquercitrin, tribuloside (kaempferol-3-O-(6''-n-coumaroyl galactoside)), kaempferol-3-O-(3'',6''-di-O-E-n-coumaroyl)-β-D-glucopyranoside, narcissin, rutin, and tribestin (diosgenin-3-O-α-L-rhamnopyranosyl-(1→2)-β-D-glucopyranoside). The presence of tribuloside (kaempferol-3-O-(6''-n-coumaroyl galactoside)) and kaempferol-3-O-(3'',6''-di-O-E-n-coumaroyl)-β-D-glucopyranoside in the aerial parts of *Tribulus terrestris* was confirmed for the first time. The hypoazotemic activity of isoquercitrin, tribuloside, rutin, and tribestin was evaluated in a rat model of acute renal failure.

Biological studies were performed on white outbred male rats weighing 200–250 g. Acute renal failure was induced after 24 h of food deprivation. The rats received either Triburenal (100 mg/kg), the tested individual compounds, or the reference drug cinaroside (50 mg/kg) orally. One hour later, the animals received a single intramuscular injection of 50% aqueous glycerol (10 ml/kg). All compounds were administered once daily for 3 days. Hypoazotemic efficacy was assessed by measuring serum urea and creatinine concentrations on the third day of the experiment.

The results showed that serum urea levels decreased by 21.6% with rutin, 22.4% with isoquercitrin, 21.0% with tribestin, 25.4% with tribuloside, 34.3% with Triburenal and 27.4% with the reference drug cinaroside compared with the control group. The effectiveness of reducing the concentration of creatinine in the blood of experimental animals under the influence of rutin was 18.5%, isoquercitrin – 26.2%, tribestin – 32.4%, tribuloside – 39.6%, Triburenal – 47.4% and the reference drug – 41.3% than the control group.

The studied compounds - rutin, isoquercitrin, tribestin and tribuloside - present in Triburenal obtained from *Tribulus terrestris* meal exhibited a hypoazotemic effect by reducing the severity of kidney damage in experimental acute renal failure. Triburenal demonstrated particularly high hypoazotemic activity, possibly due to the presence of highly active compounds and the potentiation of their effects. Its activity was comparable to that of the most active individual compounds and the reference drug cinaroside. The results obtained make it possible to further standardize hypoazotemic agents in terms of the content of flavonoids in terms of rutin, isoquercitrin and tribuloside, as well as the content of saponins in terms of tribestin.