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5,6-DIHYDRO-PGE$_3$ — A NEW NATURAL PROSTAGLANDIN

N. SAMEL, I. JÄRVING, M. LÕHMUS, Annika LOPP, G. KOBZAR, V. SADOVSKAJA, T. VÄLIMÄE, Ü. LILLE. 5,6-DIHÜDRO-PGE$_3$ — UUS LOODUSLIK PROSTAGLANDIIN

Н. САМЕЛЬ, И. ЯРВИНГ, М. ЛЫХМУС, Анника ЛОПП, Г. КОБЗАР, В. САДОВСКАЯ, Т. ВЯЛИМЯЭ, Ю. ЛИЛЛЕ. 5,6-ДИГИДРО-ПГЕ$_3$ — НОВЫЙ ПРИРОДНЫЙ ПРОСТАГЛАНДИН

A novel natural E-prostaglandin was detected by the HPLC among the endogenous prostaglandins extracted from ram seminal vesicles. The corresponding precursor — all-*cis*-eicosa-8,11,14,17-tetraenoic acid — was isolated from bovine liver lipids (the structure was verified by ^{13}C-NMR spectra) and preparative biosynthesis with the delipidized microsomal fraction of ram seminal vesicles [1] was performed. The isolated product was purified by the HPLC and identified by GC-MS as 5,6-dihydro-PGE$_3$.

Biosynthesis yield and biological activity of E-prostaglandins

Fatty acid	Prostaglandin	Substrate conversion, %	Antiaggregatory activity (IC_{50}), nM *	Contracting activity (EC_{50}), nM *
$C_{20:3\omega 6}$	PGE_1	72.1	57.3±8.8	56±8
$C_{20:4\omega 6}$	PGE_2	74.0	not performed	24±5
$C_{20:4\omega 3}$	5,6-dihydro-PGE_3	6.2	76.7±8.5	790±70
$C_{20:5\omega 3}$	PGE_3	5.4	not performed	400±50

* Mean ± S.E. ($n \geqslant 4$).

The results of *in vitro* tests demonstrate that the contracting activity of 5,6-dihydro-PGE$_3$ on the isolated non-pregnant rat myometrium is 14 times lower than that of PGE$_1$. On the other hand, on rabbit platelet-rich plasma, 5,6-dihydro-PGE$_3$ inhibits ADP-induced platelet aggregation with a potency similar to that of PGE$_1$. Thus, 5,6-dihydro-PGE$_3$ meets the requirements of a selective antithrombotic agent better than PGE$_1$.

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1. *Wallach, D. P., Daniels, E. G.* Properties of a novel preparation of prostaglandin synthetase from sheep seminal vesicles. — Biochim. Biophys. Acta, 1971, **231**, 445—457.

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