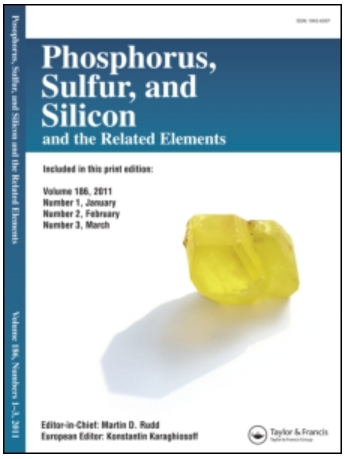

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Synthesis and Toxicological Characterization of Poly(oxyethylene)s Functionalized with Quaternary Phosphonium End Groups

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SYNTHESIS AND TOXICOLOGICAL CHARACTERIZATION OF POLY(OXYETHYLENE)S FUNCTIONALIZED WITH QUATERNARY PHOSPHONIUM END GROUPS

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In the present article, we present a new variant of the synthesis of the poly(oxyethylene)s functionalized with quaternary phosphonium end groups by polymer-analogous quaternization reaction.

$$HO-[EO]_n-OH+HX+R_3P \rightarrow X^-R_3P^+-[EO]_n-P^+R_3X^-$$

$[EO]_n = -CH_2CH_2-[OCH_2CH_2]_{n-1}$, X = Cl. $\underline{P_1C}$: R = $-C_6H_5$;

$\underline{P_2C}$: R = $-C_2H_5$; $\underline{P_3C}$: R = $-C_4H_9$.

The products were characterized by IR, UV, ^{1}H, NMR spectroscopy, thin-layer chromatography.

The acute toxicity was evaluated by the determination of the lethal doses. The main category of the determined LD were the mean lethal dose (LD50) and the maximum lethal dose (LD100).

EXPERIMENTAL DESIGN

Substance assessed: P_1C, P_2C, P_3C, solution 25%;—animals: white mice;—Way of administration: intraperitoneal; —Number of administration: 1;—Duration of the experiment: 7 days.

According to the toxicity scale of Hodge and Steaner P_1C, P_2C, P_3C can be considered as low toxic compounds. Symptoms: excitation/inhibition, tetanic muscular contractions, severe respiratory insufficiency.

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TABLE 1 Lethal Doses of P_1C, P_2C, and P_3C Calculated by the Probit Method

	Dose mg/Kg b.w.		
Lethal dose	P_1C	P_2C	P_3C
DL50	2963	2415	3336
DL100	4297	3618	4692

Lung congestion/edema, dramatic lesions in CNS, were observed by macro- and microscopic examination.