of PGG_2 to TxA_2 is enzymic. The platelets were disrupted by freezing and thawing three times. The lysate was centrifuged at 5000 *g* for 50 min and the supernatant recentrifuged at 100,000 *g* for 60 minutes. The resultant microsomal pellet was washed and re-suspended in 2 ml of 100 mM Tris (pH 7.5) buffer.

The biological activity of the products was assayed on a rat stomach strip and rabbit aorta superfused at 10 ml per min with Krebs' solution at 37°C containing a mixture of antagonists (Gilmore, Vane & Wyllie, 1968) plus indomethacin (1 μg/ml) to make the assay more specific.

PGG_2 or PGH_2 contracted rabbit aorta and rat stomach strip in a concentration dependent manner. When PGG_2 or PGH_2 was incubated at 0°C with horse platelet microsomes and immediately tested, the contraction of the rabbit aorta was greatly augmented; the contraction of the rat stomach strip was substantially reduced, or disappeared altogether.

When PGG_2 was incubated with intact platelets, a powerful rabbit aorta contracting substance was also produced. Neither boiled platelet microsomes nor the 100,000 *g* supernatant fraction from lysed platelets converted PGG_2 or PGH_2 into a more potent compound.

PGG_2 has a half life in aqueous solution of about 5 min (Hamberg & Samuelsson, 1973); after standing at room temperature in an aqueous solution for 25 min, the intrinsic contractor activity on rabbit aorta disappeared, as well as the ability to generate RCS after incubation with platelet microsomes.

When arachidonate was incubated (without cofactors) with the microsomal preparation of ram seminal vesicles prepared according to Takeguchi, Kotina & Sih (1971), a product was formed which behaved like PGG_2 or H_2. It contracted rat stomach strip and rabbit aorta and had a half life of 3-5 minutes. It was converted to a more potent RCS-like substance ($t_{1/2}$ = 30 s) by incubation with platelet microsomes. Thus, we consider seminal vesicle microsomes plus arachidonate as an endoperoxide generating system (i.e. cyclo-oxygenase) and platelet microsomes plus PGG_2 as an RCS (TxA_2) generating system (thromboxane synthetase).

The use of these two enzyme systems, either alone or in combination, offers a relatively simple source of endoperoxides and TxA_2 which are extremely unstable materials otherwise difficult to obtain. The transformation of endoperoxides to TxA_2 could be of importance in physiological or pathophysiological conditions.

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Chemotactic activity of solutions of prostaglandin E_1

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Prostaglandin E_1 but not other prostaglandins (A_1, E_2, $F_{2\alpha}$) has been reported to possess chemotactic activity against rabbit polymorphonuclear leucocytes *in vitro*. The earlier observations were obtained using a concentration of 1 μg/ml (Kaley & Weiner, 1971; McCall & Youlten, 1973) but more recently it has been claimed that the prostaglandin is chemotactic at concentrations down to 10 ng/ml (Higgs, McCall & Youlten, 1975). This finding is of much more relevance to inflammation *in vivo* since it occurred at concentrations below those of the total prostaglandins found in the carrageenin-induced air bleb in the rat (McCall & Youlten, 1974).

Other workers (Turner, Campbell & Lynn, 1975) have failed to detect any chemotactic activity of various prostaglandins, including E_1, towards human polymorphonuclear leucocytes *in vitro* even at concentrations as high as 100 μg/ml. Furthermore the local injection of prostaglandin E_1 into areas of human and rat skin does not cause

Table 1 Chemotactic activity of prostaglandin E_1 (1 μg/ml)

Fresh solution		*Solution after 12 h*	
Random migration	*Directed migration*	*Random migration*	*Directed migration*
62.0 ± 3.5	61.7 ± 5.2	49.8 ± 0.7	96.8 ± 15.2*
17.3 ± 2.3	17.4 ± 0.7	27.4 ± 1.0	47.0 ± 1.1*
29.9 ± 2.8	33.9 ± 7.1	65.9 ± 6.1	182.8 ± 28.6*
125.9 ± 12.0	119.5 ± 16.4	17.4 ± 1.9	30.5 ± 2.0*
73.9 ± 1.3	73.5 ± 1.2	34.4 ± 1.4	45.8 ± 5.8

Results given as number of cells per high power field, each figure being the mean ± s.d. of three chambers. For the measurement of random migration PGE_1 was placed in both compartments of the Boyden chambers; for directed migration (chemotaxis) it was present in the lower chamber only.
* $P < 0.05$

an increased emigration of leucocytes (Søndergaard & Wolf-Jürgensen, 1972; Arora, Lahiri & Sanyal, 1970).

We have therefore studied the effect of solutions of prostaglandin E_1 on the directed migration of rat polymorphonuclear leucocytes using the Boyden chamber technique described previously (Walker, Smith, Ford-Hutchinson & Billimoria, 1975). The results (Table 1) show that when a 1 μg/ml solution of Prostaglandin E_1 in a suitable aqueous medium, e.g. Medium 199 or Hanks, is tested immediately no chemotactic activity is detectable. When the aqueous solution has been allowed to stand either at $-20°$ or at room temperature for 24 h then chemotactic activity appears. It is concluded that the material responsible for this activity is not prostaglandin E_1 itself but some product formed by chemical changes in the aqueous media.

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Inhibition of phagocytosis by mepacrine

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When human or horse plasma containing leucocytes is passed through a column of glass wool, most of the granulocytes, monocytes and platelets are trapped but most of the lymphocytes are not. The number of cells sticking can be measured by counting the cells in the plasma before and after it has passed through the column. In conditions which will be described, 43.0 ± 4.6% (mean ± s.e. mean, $n = 10$) of the leucocytes applied are recovered. When mepacrine hydrochloride is added to the plasma, fewer cells stick. Concentrations