more toxic, causing diarrhoea and severe weight loss. The multiple emulsion caused no weight loss and only slight diarrhoea in some cases. If folinic acid was administered three days after treatment with methotrexate sodium containing multiple emulsion, the reduction in the white cell count was unaffected but recovery was rapid, and a large secondary neutrophilia resulted. Earlier administration of folinic acid, however, prevented so profound a reduction in the white cell count, and promoted an earlier recovery from the effect of the emulsion with only a small secondary neutrophilia.

A single injection of cytosine arabinoside in a multiple emulsion was as effective as five daily doses of the drug in aqueous solution at the same dose level.

Vinblastine sulphate as a single aqueous injection caused a gradual increase in the number of bone marrow cells arrested in metaphase for up to four hours after administration. When the drug was administered in a multiple emulsion, the increase in the number of arrested metaphases was still continuing after 48 hours.

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The role of iron in the metabolism of tissue ascorbic acid

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Lipschitz *et al* (1971) studied the effect of altered ascorbic acid (AA) tissue stores on iron metabolism in scorbutic male guinea-pigs. They showed that the hepatic iron concentration is decreased and that the release of iron from different body stores is affected by AA tissue levels. A corresponding study has been carried out on female guinea-pigs in which the effect of alteration of tissue iron stores has been investigated on AA metabolism. Three groups of guinea-pigs (Fe, FeD and Sc) were placed on a scorbutic diet supplemented with AA 20 mg orally daily (Odumosu & Wilson, 1970) during which each animal in Group Fe received a total dose of 100 mg active iron as ferrous sulphate by stomach tube. Group FeD received the same dose of iron, but between days 15–20, the animals each received 1·0 g desferrioxamine. Group Sc received only the diet and AA supplement. Administration of the supplement was stopped on the twentieth day (Day 0). Plasma and liver concentrations of AA and iron were measured on Day 0, Day 24, and Day 36 of the scorbutogenic diet (Table 1). On Day 0, plasma AA concentrations were highest in the Fe group which also had the highest value for plasma iron. On Day 24, plasma AA was significantly lower in the Sc group than in the other two groups, which had received iron. It can be concluded that tissue iron overload is associated with raised plasma AA levels. On Day 0, hepatic AA concentrations were similar in all the groups even though hepatic iron concentrations were highest in the Fe group and lowest in the Sc group. It can be concluded that hepatic iron does not affect liver AA concentrations in the presence of tissue AA saturation. On Day 24 hepatic AA was highest in the Sc group and lowest in the Fe group.

The iron stores were inversely related to AA levels in the liver. In conditions of iron stress the available hepatic AA is released into the plasma for metabolic purposes. On Day 36 plasma AA concentrations were lowest in the Fe group, and hepatic AA concentrations were slightly higher in the FeD than in the other groups. This suggests that metabolic readjustment to AA deprivation may be altered in female guinea-pigs subjected to iron load (Odumosu & Wilson, 1971).

TABLE 1. *Tissue ascorbic acid (AA) and iron concentrations (mean±S.D.) in plasma (mg/100 ml), and liver (mg/g). Diet (Sc), pretreated with iron (Fe) or iron and desferrioxamine (FeD). Significance of comparisons with Fe group indicated* (P = <0·05)

	Plasma					Liver				
	Ascorbic acid concentrations									
Day of diet	Sc	Sig.	Fe	Sig.	FeD	Sc	Sig.	Fe	Sig.	FeD
0	0·88±0·12	S	1·65±0·23	S	0·80±0·20	17·45±5·16	NS	16·72±2·64	NS	18·16±2·11
24	0·32±0·04	S	0·51±0·09	NS	0·55±0·12	3·39±0·59	S	2·21±0·48	NS	2·88±0·57
36	0·24±0·04	S	0·13±0·05	S	0·22±0·06	1·26±0·51	NS	1·28±0·42	NS	1·77±0·31
	Iron concentrations									
0	0·20±0·05	S	0·30±0·03	S	0·23±0·01	2·55±0·43	S	11·55±1·80	S	5·48±0·77
24	0·24±0·04	NS	0·24±0·03	NS	0·21±0·02	1·13±0·13	S	4·07±1·76	S	1·76±0·19
36	0·15±0·02	NS	0·11±0·02	NS	0·11±0·02	0·58±0·03	S	1·52±0·26	NS	1·81±0·25

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Protein changes in hind limb lymph following injury

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After injury plasma proteins (Courtice, 1961 ; Courtice & Sabine, 1966) and intracellular constituents from damaged cells appear in local lymph (Perlman, Glenn & Kaufmann, 1943, Lewis, 1967). The present experiments were designed to determine the contribution which these sources make in increasing the protein concentration in lymph following injury.

Lymph was collected from anaesthetized cats as described by Lewis & Winsey (1969). Electrophoresis of plasma, lymph and homogenates of skin and muscle was carried out on starch gels prepared by the method of Smith (1960), using the discontinuous buffer system of Poulik (1957). Injury was produced by immersing one hind limb in water at 60°C for 1 min or at 80°C for 15–20 sec, or by freezing the limb in dry ice and acetone for 3 min.

Control lymph contained up to 18 separate bands representing protein constituents of plasma, although the concentrations were lower, particularly those of the higher molecular weight proteins.

After injury, when the vascular permeability had increased, there was rapid increase in total protein concentration and particularly in the higher molecular