with normal saline. Urine and faecal samples were collected from each rat daily and the total excretion of cadmium was calculated from radioactivity. All rats were examined for ^{109}Cd radioactivity in a whole body counter[18] before and during the experiment.

Injections of BAL, both alone and in combination with DTPA, decreased the total body burden of cadmium in cadmium-exposed rats (Fig. 1), which retained only 57% and 40% of initial radioactivity, respectively. The control group on the other hand, retained about 92% of the cadmium. Thus the chelating agents effectively removed cadmium from the body when treatment started 3 days after injection of cadmium. In our previous *in situ* studies[17], BAL was the only chelating agent able to remove cadmium through the bile after the metal was bound to metallotheionein. Compounds such as 1,3-dimercaptopropanol and dimercaptosulphonic acid, which are structurally similar to BAL, had no effect. Therefore structural features, such as adjacent sulphydryl groups and lipophilic properties of chelating agents, are important for the chelation of cadmium from metallothionein *in vivo*.

Analysis of excreta for radioactive cadmium showed (Fig. 2) that the major route of excretion of cadmium after injection of chelating agents was in the faeces. The control group (group 3) excreted about 6% and 0.06% of the administered dose in faeces and urine, respectively, during the experimental 2 weeks. The group injected with BAL (group 1) excreted 28% in faeces and 1.4% in urine, while the group injected with a combination of BAL and DTPA (group 2) excreted 34% in faeces and 4.5% in urine. These results also suggested that the cadmium excreted through the bile after injection of BAL is not reabsorbed from the gut and is excreted in the faeces. Injection of DTPA with BAL increased both faecal and urinary excretion of cadmium.

The amount of cadmium in both liver and kidneys was significantly reduced after treatment with BAL or BAL and DTPA when compared with untreated rats (Table 1). The effect of BAL was more marked in the liver than in the kidneys. However, the mobilization of cadmium from the liver by BAL or BAL and DTPA together did not result in increased renal accumulation of the metal. In previous studies[8–11,17], when BAL was injected into animals before all the cadmium was bound to metallothionein, a major portion of cadmium associated with other bioligands was mobilized to the kidneys, increasing their content of cadmium. Thus the presence of metallothionein in the tissue may be an important factor in the effective therapeutic chelation of cadmium.

Our results provide the first evidence that BAL can be used successfully in proper conditions and at appropriate doses to mobilize cadmium from the liver without affecting its deposition in the kidneys, the critical organs in chronic cadmium toxicity. In reports from other laboratories[19,20] of chelation therapy for cadmium poisoning, chelating agents were administered within a short time of exposure to cadmium and the effect was measured by the rate survival of the animals. Those studies did not involve measurement of cadmium, and it was not clear whether the administered cadmium was either chelated or excreted from the body. One such study was later found to be invalid[21,22] and retracted[23]. Moreover, those studies do not have any relevance to the treatment of chronic poisoning. Our study reveals the potential use of BAL or BAL and DTPA together as a means of chelation of cadmium to remove it from the body without affecting the kidneys.

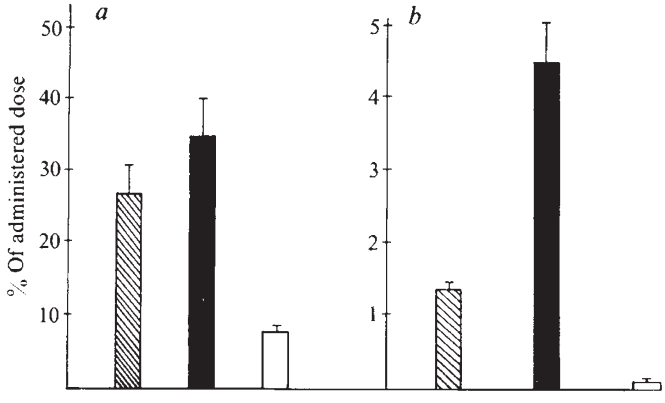

Fig. 2 Cumulative faecal (*a*) and urinary (*b*) excretion of cadmium in rats injected with $CdCl_2$ and treated with BAL (group 1, hatched columns) or BAL and DTPA (group 2, solid columns) or saline (group 3, open columns). Results are expressed as mean ± s.d.

Table 1 Tissue content of cadmium in rats injected with $CdCl_2$ and treated with saline or BAL and DTPA

Group	Concentration of Cd (μg mean ± s.d.)	
	Liver	Kidney
1	2.95 ± 0.4*	3.85 ± 0.3
2	1.55 ± 0.5*	2.10 ± 0.1*
3	9.30 ± 0.4	5.15 ± 0.6

All rats were injected with $^{109}CdCl_2$ (1 mg per kg; 5 μCi). Three days later they were injected i.p. with BAL (50 mg per kg, group 1) or BAL and DTPA (50 mg per kg, group 2) or saline (group 3) for 2 weeks. Rats were killed 2 d after the last injection and tissue concentration of cadmium was determined from radioactivity.
* $P < 0.01$.

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Errata

In the article 'A low resolution structure for the histone core of the nucleosome' by A. Klug, D. Rhodes, J. Smith, J. T. Finch and J. O. Thomas, *Nature* **287**, 509–516, the third line of the equation displayed on the right-hand column of p. 514 should read

$$(H3)_2(H4)_2 + 2 \times H2A\ H2B$$

Also, in the same article, line 2 of the legend to Figure 7 should read 110° in place of 115° and 90° in place of 95°.