

表1 Cd absorption from the digestive tracts.

Ref.	Year	TS*	Subjects sex n age	Source of Cd	Cd-I	Absorption- related rate	Notes
Flanagan et al.	1978	R	M 10 24±1.1	$^{115m}\text{CdCl}_2$ once at breakfast	$5\mu\text{Ci } ^{115m}\text{Cd}$ $25\mu\text{g (22-29)}$	2.6 ± 0.6 7.5 ± 1.8	^{51}Cr was used as a marker of complete discharge of the ingested meal from the digestive tract. Radioactivity of ^{115m}Cd in the body was measured 1 week after ^{51}Cr disappeared from the feces.
McLellan et al.	1978	R	M, F 14 21-61			4.6 ± 4.0	
Newton et al.	1984	R	M 7 48±11.7 (29-61)	^{115m}Cd containing crab meat once at lunch	$24-166\mu\text{g } ^{115m}\text{Cd}$	2.7 ± 0.9	Shrimp pellets were prepared by mixing shrimp meat with labeled $^{115m}\text{CdCl}_2$ and crabs were fed the pellets. Volunteers ate the crab meat and brown crab meat, and radioactivity of ^{115m}Cd in the volunteer's body was measured 26 days after the ingestion.
Suzuki and Lu	1976	B	M 2 35, 37	Cd in natural foods for 30 days	$48.18, 46.92\mu\text{g/day}$	$25.44, 23.38$	Cd-I by duplicate meal method and Cd-F were measured for 30 days. The percentages of Cd not recovered in feces were 25.44% and 23.38%.
Bunker et al.	1984	B	M, F 23 70-85	Cd in natural foods for 5 days	$8.6\mu\text{g/day}$	$-15 (-188-32)$	Cd-I by the duplicate meal method and Cd-F were measured for 5 days. Net absorption (%) was -15.
Berglund et al. and Vahter et al.	1994 and 1996	B	34 37±7.4 23 36±8.4 17 37±7.9	Cd in natural foods for 4 days	$11.1\pm4.2\mu\text{g/day}$ $16.0\pm7.1\mu\text{g/day}$ $27.8\pm17.6\mu\text{g/day}$	2 0 -1	Cd-I by the duplicate meal method and Cd-F were measured for 4 days. Average Cd-F was 98, 100 and 101% of Cd-I in 3 groups.
香山	2003	B	F 25 20-39 40-59 60-79	Cd in natural foods for 7 days	mean $477.9\mu\text{g/week}$	44 1 -5.9	
Nomiyama et al.	2002	B	F 3 23-25	Cd in natural foods containing low Cd for 5 days	mean $8.6\mu\text{g/day}$	mean -0.02	days 9th to 11th: low Cd foods
Kikuchi et al.	2003	B	F 25 20.8 (20-23)	Cd in natural foods containing low Cd for 7 days	mean $4.4\mu\text{g/day}$	mean -24.5	days 5th to 11th: low Cd foods
Kikuchi et al.	2003	B	12 20.8 (20-23)	Cd in rice for 1 day	46.53 ± 7.21	$23.9 (-4.0-37.7)$	days 1st to 11th: low Cd foods, day 12th: high Cd foods, days 13th to 20th: low Cd foods
			6	Cd in rice for 3 days	$49.47\pm3.41 \sim 52.24 \pm 0.68$	$23.7 (-8.2-56.9)$	days 1st to 11th: low Cd foods, days 12th to 14th: high Cd foods, days 15th to 20th: low Cd foods
Crew et al.	2000	U	F 3 32, 46, 51	^{106}Cd containing porridge once at breakfast	$18.81, 17.84, 16.87\mu\text{g}$	42, 40, 45	Wheat was cultivated by the hydroponic cultivation technique so as to contain the stable isotope of ^{106}Cd , and porridge was made from the wheat. The total recovery of Cd-F over 5 days was 58, 60 and 55%.
Vanderpool and Reeves	2001	U	F 14 52±13 (30-70)	^{113}Cd in sunflower butter once at breakfast	$14.4\pm5.8\mu\text{g}$	$10.6\pm4.4 (1.6-18.3)$	The stable isotope of $^{113}\text{CdCl}_2$ was injected into the stem-head junction of sunflowers, and sunflower butter was made from the ^{113}Cd -labeled sunflower kernels. Cd-F was measured for the following 21 days, and the total amount of stable isotope in feces was calculated.
Kikuchi et al.	2003	U	F 12 20.8 (20-23)	Cd in rice for 1 day	46.53 ± 7.21	$47.2 (-9.4-83.3)$	days 1st to 11th: low Cd foods, day 12th: high Cd foods, days 13th to 20th: low Cd foods
			6	Cd in rice for 3 days	$49.47\pm3.41 \sim 52.24 \pm 0.68$	$36.6 (-9.2-73.5)$	days 1st to 11th: low Cd foods, days 12th to 14th: high Cd foods, days 15th to 20th: low Cd foods

*: TS: Type of study. B; Intake-output balance study. R; Rate of remaining radioactivity of ^{115m}Cd in the body. U: Cd uptake was the amount of labeled Cd-F subtracted from the amount of labeled

表2 国内一日当りカドミウム摂取量

年	汚染地域	$\mu\text{g Cd/日}$	非汚染地域($\mu\text{g Cd/日}$)	文献
1955-56	富山県 神通川流域	600		環境庁 1972、喜田村 1972
	対馬 佐須川・椎根川流域	490		環境庁 1972、喜田村 1972
	宮城県 鉛川・二迫川流域	320		環境庁 1972、喜田村 1972
	群馬県 碓氷川・柳瀬川流域	400		環境庁 1972、喜田村 1972
1969	対馬4地域	215.2		斎藤ほか 2003
1976	対馬4地域	205.7	対馬2地域 50.4(主食39%)	斎藤ほか 2003
1983	対馬4地域(土壌復元)	76.8	対馬3地域 28.8	斎藤ほか 2003
1978	対馬	183.8	対馬 68.5(主食39%)	土屋と岩尾 1978
	梯川流域	122.6	石川 41.9(主食51%)	土屋と岩尾 1978
	小坂	101.3	秋田 65.2(主食27%)	土屋と岩尾 1978
1977-81			全国女性399名 37.5(米37%)	Watanabe et al. 1985
1991-7			全国女性588名 25.5(米40%)	Watanabe et al. 2000

表3 東南アジア各地 非汚染地域での一日当りカドミウム摂取量(陰膳方式)

地域	地点	($\mu\text{g Cd/日:GM}$)	文献	
韓国	4ヶ所	21.2	Moon et al.	1998
中国	4ヶ所	9.9	Zhang et al.	1997
マレーシア	クアラルンプール	9.0	Moon et al.	1996
フィリピン	マニラ	14.2	Zhang et al.	1998
台湾	台南	9.7	Ikeda et al.	1996
日本(1977-81)	全国	37.5	Watanabe et al.	1985
日本(1991-7)	全国	25.5	Watanabe et al.	2000

(いずれも成人女性)

図1 サルCd投与量別臓器中カドミウム濃度(Nordberg et al. 1985)

