

Table 22 hR_f Values of PTH Amino Acids on Silica Plates Impregnated with Zinc Salts

PTH amino acid	S ₁ (heptane–butyl acetate, 15 + 5)				S ₂ (heptane–propionic acid, 20 + 4)				S ₃ (benzene–ethyl acetate, 15 + 3)			
	L ₁	L ₂	L ₃	L ₄	L ₁	L ₂	L ₃	L ₄	L ₁	L ₂	L ₃	L ₄
Methionine	17	22	18	25	33	33	29	33	42	57	48	58
Phenylalanine	22	25	25	28	37	38	35	36	47	60	52	60
Tryptophan	36	41	41	51	40	50	40	55	67	74	61	82
Valine	40	35	44	42	52	53	54	52	54	68	64	69
Isoleucine	50	46	55	54	60	62	63	63	62	79	74	74
Tyrosine	55	48	59	56	62	64	75	65	64	84	79	78
Threonine	47	40	52	48	53	51	52	56	57	72	72	67
Alanine	23	17	21	22	29	27	23	27	35	44	38	44
Serine	49	45	42	50	38	36	37	39	52	66	60	64
Leucine	55	51	55	59	61	60	67	60	65	81	77	76
Lysine	03	02	03	03	04	05	04	07	6	7	6	8
Glycine	15	10	12	13	16	15	15	15	24	29	25	31
Glutamic acid	0	04	0	04	03	02	02	04	0	0	0	0
Aspartic acid	0	05	0	05	04	03	03	05	0	0	0	0
Proline	38	25	32	30	40	40	40	42	70	77	83	72

L₁, L₂, L₃, L₄, plates impregnated with Cl⁻, SO₄²⁻, CH₃COO⁻, and PO₄³⁻ of zinc, respectively. Other conditions as in Table 14.

Source: Ref. 26.

B. Resolution of Enantiomers of PTH Amino Acids

Enantiomeric PTH amino acids were resolved (22) by mixing (+)-tartaric acid or (+)-ascorbic acid with silica gel during plate making, which resulted in the formation of diastereomers during development of the chromatogram, i.e., in situ rather than by prior treatment of racemic mixture with a chiral selector. Thus, a difference in the solubility of diastereomers so formed was the basis of achieving resolution (Table 31).

Table 23 TLC of PTH Amino Acids on Impregnated Silica Gel Layers

Solvent system	Ratio	Impregnation ^a	Reference
CHCl ₃ –H ₂ O–EtOAc	28:1:1	Zn ²⁺ , Cd ²⁺ , Hg ²⁺	18
CHCl ₃ –MeOH–benzene	19:1:9		
CCl ₄ –HOAc	19:1		
CHCl ₃ –benzene–EtOAc	25:5:3	Fe ²⁺ , Co ²⁺ , Zn ²⁺	19
CHCl ₃ –EtOAc	29:3	Fe ²⁺ , Co ²⁺ , Ni ²⁺	21
<i>n</i> -Heptane– <i>n</i> -butyl acetate	15:5	Cl ⁻ , CH ₃ COO ⁻ , PO ₄ ³⁻	26
<i>n</i> -Heptane–propionic acid	20:4	of zinc, or SO ₄ ²⁻ of	
Benzene–EtOAc		Mg ²⁺ , Mn ²⁺ , Fe ²⁺ , Co ²⁺	
CHCl ₃ – <i>n</i> -butyl acetate	10:5		30
CHCl ₃ –EtOAc	25:2		

^aSeparation data provided for various concentrations of each of the impregnating reagent.