

A galanin(2-11) analogue specific for GalR2

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Introduction

The neuropeptide galanin family currently consists of four members, namely galanin (Fig 1.), galanin-message-associated peptide (GMAP), galanin-like peptide (GALP) and alarin [1]. Galanin has been shown to influence several physiological processes including cognition, affective behavior, nerve injury, Alzheimer's disease, neuro-regeneration, seizures, feeding [2], and hormone release. The co-localization with other neuro-modulators and the distinct up-regulation during and after pathological disturbances has attracted attention to this neuropeptide family. The regionally specific expression of the galanin receptors (GalR1-3) suggest different physiological roles, a feature which mostly remains unexplored due to the lack of stable, selective and potent ligands acting on the GalRs. A often used tool within the galanin field is the galanin fragment, galanin(2-11), with a preferential binding to GalR2 and GalR3 (Fig 2.).

Conclusions

We now introduce an analogue of galanin(2-11), named J1 (Fig 3.), that combines the GalR2-selective binding (Table 1), comparable with the published M1145 [3], with the small size of galanin(2-11). Utilizing this true GalR2 selective ligand will help to define the role of GalR2 in general and especially for already published studies that has been exploiting galanin(2-11).

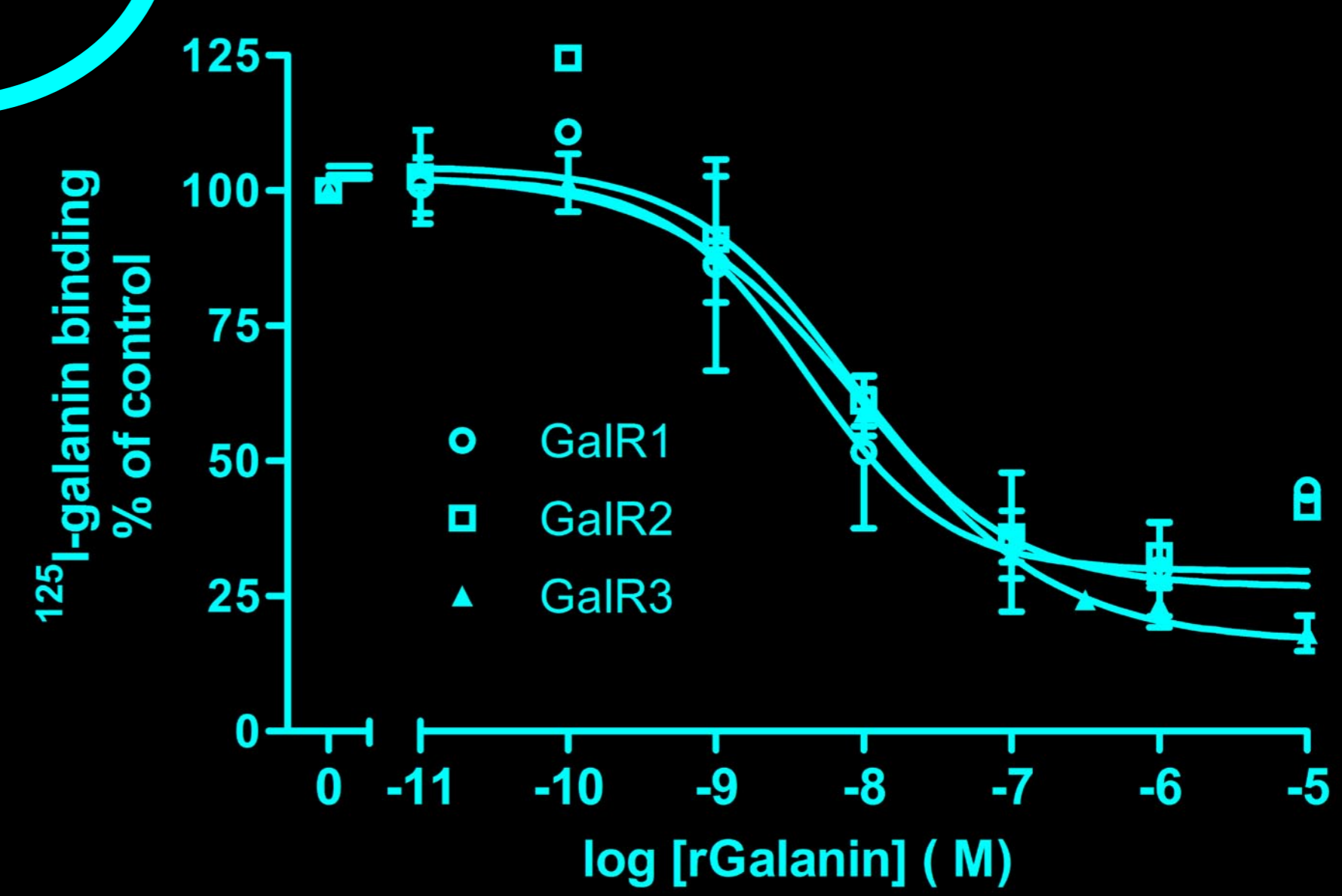
References

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- [2]. Saar, I., **Runesson, J., et al.** (2011). Novel galanin receptor subtype specific ligands in feeding regulation. *Neurochem Int.* 58(6), 714-720.
- [3]. **Runesson, J., et al.** (2009). A novel GalR2-specific peptide agonist. *Neuropeptides* 43(3), 187-192.

Acknowledgments

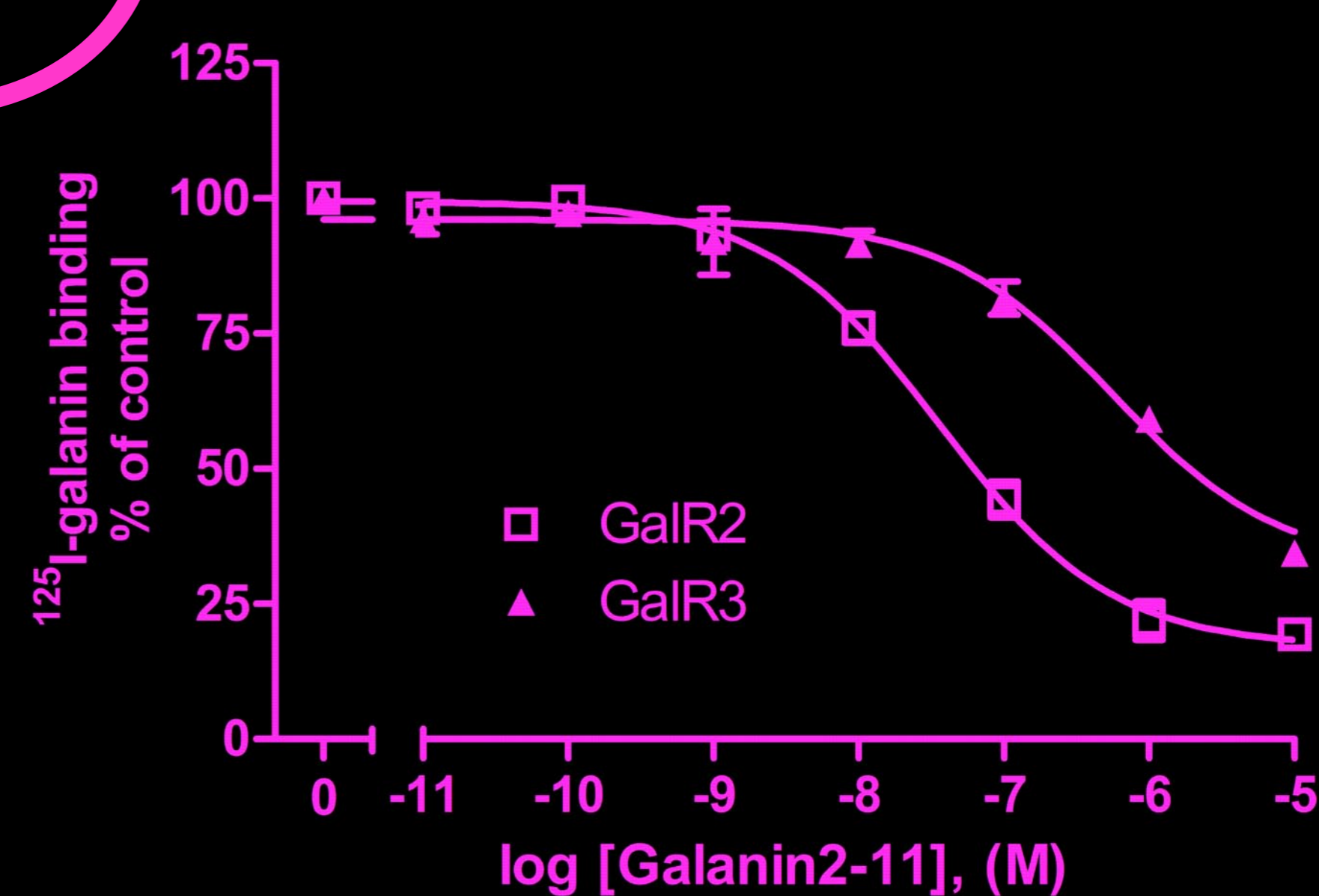
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Fig 1.



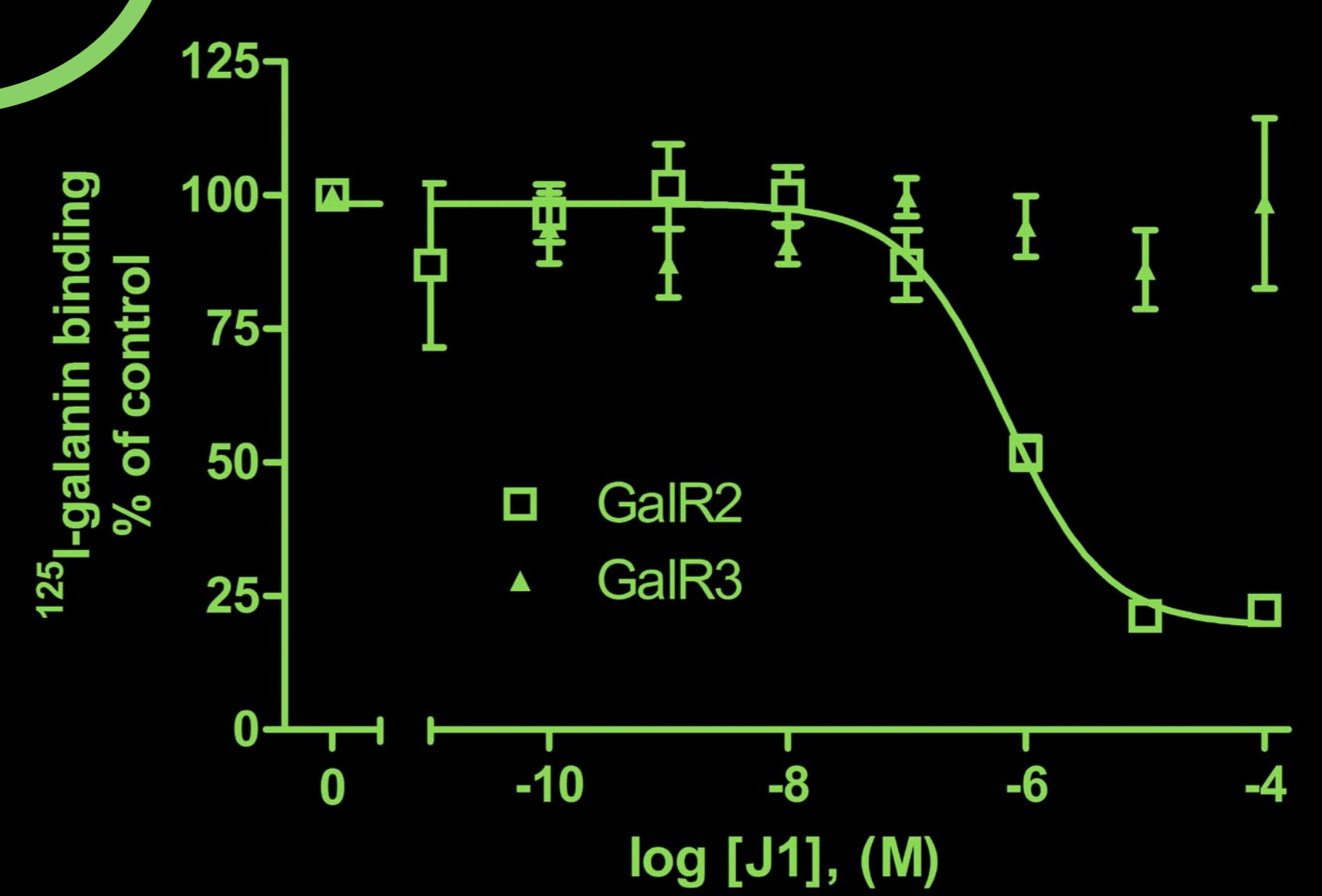
Galanin receptor binding studies. Displacement of porcine-[¹²⁵I]-galanin from membranes with GalR1 (open circles), GalR2 (open squares) and GalR3 (closed triangles) by rat (r) galanin. The data is from three experiments performed in duplicates, presented as mean ± SEM. K_i values are summarized in Table 1.

Fig 2.



Galanin receptor binding studies. Displacement of porcine-[¹²⁵I]-galanin from membranes with GalR2 (open squares) and GalR3 (closed triangles) by galanin(2-11). The data is from three experiments performed in duplicates, presented as mean ± SEM. K_i values are summarized in Table 1.

Fig 3.



Galanin receptor binding studies. Displacement of porcine-[¹²⁵I]-galanin from membranes with GalR2 (open squares) and GalR3 (closed triangles) by J1. The data is from three experiments performed in duplicates, presented as mean ± SEM. K_i values are summarized in Table 1.

Table 1.

Experimental K_i determined by displacement studies with Porcine-[¹²⁵I]-Galanin on Bowes Melanoma Cells expressing hGalR1, CHO cells stably transfected with hGalR2 or Flp-In T-REx 293 cells expressing hGalR3.

Name	K _i (nM)			K _i GalR1/ K _i GalR2	K _i GalR3/ K _i GalR2
	GalR1	GalR2	GalR3		
rat Galanin	1.75 ± 1.7	2.98 ± 1.4	4.49 ± 0.8	0.6	1.5
Galanin(2-11)	n.t.	16.6 ± 3.5	199 ± 98	-	12
J1	n.t.	266 ± 67	n.b.	-	>500

n.t., not tested; n.b., no binding detected



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