Table 2. The dependence of analgesic effect (latency time [s] after nociceptive stimulus) of D-Arg^4-tuftsin on dosage, and on presence of naloxone ($n=7$; [a] $p<0.01$, [b] $p<0.001$, [c] experiment performed with two experimental animals)

Dose	Time after injection [min]											
	0	1	2	3	4	5	10	15	20	30	40	60
100 µg/10 µl	6.1 ±0.5	29.2 ±0.7[b]	30.0[b]	30.0[b]	30.0[b]	30.0[b]	30.0[b]	30.0[b]	28.1 ±1.8[b]	16.2 ±1.5[a]	14.1 ±1.2[a]	8.4 ±1.1
50 µg/10 µl	6.6 ±0.3	28.8 ±0.7[b]	26.4 ±1.9[b]	23.2 ±2.4[a]	16.1 ±0.9[a]	10.2 ±0.7	8.0 ±0.5	7.7 ±0.5	8.0 ±0.3	7.8 ±0.3	6.7 ±0.4	6.8 ±0.3
Naloxone 2.5 mg/kg i.p. D-Arg^4-tuftsin 50 µg/10 µl i.c.v. after 30 min[c]	7.5	30.0	30.0	30.0	25.0	17.5	19.5	18.0	13.0	13.0	9.0	9.0
Control: Naloxone 2.5 mg/kg i.p. 10 µl 0.9% NaCl i.c.v.[c]	6.8	16.0	17.5	14.3	12.0	9.5	8.4	8.7	7.6	7.2	7.0	7.5

algesia of 20-min duration. The substitution of Arg residue in position 4 of tuftsin by the basic Lys residue gives the analog *1*, which is as potent as tuftsin itself. D-Arg^4-tuftsin (*4*) appeared a most potent analgesic agent. Its antinociceptive effect persisted 150 min after injection into the lateral brain ventricle of the rat.

The biological effect of D-Arg^4-tuftsin is dose-dependent (Table 2), and is not antagonized by prior i.p. injection of 2.5 mg/kg of naloxone (Endo Lab.). The action of this peptide administrated in a dose of 200 µg is accompanied, however, by a high toxicity (about 75% of the rats died within a few hours after the experiment). It should be noted that no parallel was observed between the analgesic potency and phagocytic properties [11] of the investigated tuftsin analogs.

The origin of analgesic activity of tuftsin remains unclear. It is remarkable, however, that in the sequence of tuftsin, D-Leu^1-tuftsin, and most active D-Arg^3-, and D-Arg^4-tuftsin, some similarity to the sequence of basic fragment of α-neo-endorphin [12] appears. α-Neo-endorphin proved to be a "big" Leu-enkephalin. For its N-terminal fragment the sequence Tyr-Gly-Gly-Phe-*Leu-Arg-Lys-Arg*-Pro-... was established. The basic fragment 5–8 strongly potentiates the analgesic activity of the peptide. α-Neo-endorphin (1–9) nonapeptide shows the activity comparable to that of α-neo-endorphin. The activity of nonapeptide (1–9) is more than ten times greater than that of Leu-enkephalin [12]. It is possible that tuftsin simulates the effect of basic fragment of α-neo-endorphin interacting with the same receptor site.

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Erratum

A New Crystalline Phase of Indigo, by P. Süsse and A. Wolf: Naturwissenschaften *67*, 453 (1980)

The *z* parameter of N in Table 2 is by mistake given as 0.0166(5). It should be −0.0166(5).

Buchbesprechungen

Catalogue of the Universe. By P. Murdin and D. Allen. Cambridge: University Press 1979. 256 pp. (Original Photographs by D. Malin), £ 9.50.

Dem hohen Anspruch des lapidaren Titels kann das Buch nicht gerecht werden. Es ist vielmehr im wesentlichen eine relativ umfangreiche und systematisch geordnete Auswahl von kommentierten Aufnahmen der optischen Erscheinungen astronomischer Objekte. Dabei wird mit den großen Bausteinen des Kosmos, den Galaxien, begonnen und schrittweise zu Objekten geringerer Ausdehnung übergegangen. Außergalaktische Systeme, Sterne und Nebel unseres Milchstraßensystems und die Körper des Sonnensystems sind jeweils angemessen vertreten. Die Qualität der Bilder ist im allgemeinen gut, einige sind exzellent, beispielsweise Abbildungen des Orionnebels und des Lagunennebels, andere fallen in der Reproduktion etwas schwach aus, so etwa eine zusammengesetzte Aufnahme der Großen Magellanschen Wolke und eine alte Milchstraßendarstellung von der Sternwarte Lund. Hinsichtlich des begleitenden Textes, der ungefähr gleichviel Raum beansprucht wie die Bilder, haben sich die Autoren – laut Vorwort – ein lobenswertes Ziel gesetzt:

