Die Mutter wird aktiviert	unspezifisch durch Gestalt und Bewegung des Jungen Jungenrufe	spezifisch durch Individualgeruch des Kindes	spezifische Wirkung ab 12 h nach Geburt (evtl. früher)
Das Junge wird aktiviert	Alttiergestalt Alttierruf	Muttergestalt Mutterruf (in bestimmten Situationen ?)	ab 3. Lebenstag (evtl. früher)
Die Mutter wird gehemmt	durch Geruch eines fremden Jungen		
Das Junge wird gehemmt	durch Abwehrbewegung fremder Schafe		

Summary: A group of six Mouflon Mountain Sheep (*Ovis aries musimon*, Pall.) and their lambs were observed in an enclosure of the Animal Park in Berne (Switzerland). Auditive stimuli (voices of lambs) from a recorder cause the mother-sheep to look for their young but did not have a specific value. By experiments with olfactory stimuli it has been proved that mother-sheep know their lambs individually by smell already at the age of twelve hours. The lambs know their mother by sight from the third day on. The relation of the lamb to the specific characters of Mouflon-sheep results from a learning process and not from imprinting.

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Städtischer Tierpark Dählhölzli, Bern (Schweiz), 4. Februar 1962.

[9] Mit Unterstützung des Schweiz. Nationalfonds zur Förderung der wissenschaftlichen Forschung.

PRO EXPERIMENTIS

Project for a System for the Automation of Stellar Quantitative Spectrography

An automatic digital microphotometer (ADM) has been projected by the authors in the Merate Observatory, with the collaboration of Dr. F. POTENZA, to reduce the long and laborious operations necessary for performing a quantitative interpretation of stellar spectra, and to increase the precision of the measurements. The ADM is required to perform many and different operations: e.g. the calibration of the plate for transforming the photographic transparencies to intensities. Furthermore, the instrument will scan the whole stellar spectrogram by steps which can be changed between a minimum of 2 μ to a maximum of 100 μ. At each step the ADM punches on the tape 2 numbers: one corresponding to the position in the sense of the dispersion, a function of the wave length, and the second corresponding to the transparency (or directly to the intensity if the automatic device, which sets in code the displacement of the calibration wedge, is used). In addition it is necessary to scan some selected regions of the comparison spectrogram, in order to set in code those positions corresponding to known wave lengths. These positions will be worked out by the computer for transforming to wave lengths the displacements of the plate carriage holding the stellar spectrogram. It is also necessary to measure some specially selected regions on the stellar spectrogram, where the windows on the continuum are found. The computer will use these data for constructing an interpolation curve of the continuum through these windows. When the whole stellar spectrum and the calibration wedge has been scanned, the ADM gives a punched tape which contains several series of data.

The most suitable computers for working out the data are: Olivetti 6001, IBM 1620, Borroughs E 101, R. Mac Bee which use the tape directly. The tape giving the reduced spectrogram (RS), coming out from the computer, will be put again in a particular section of the ADM which will put the RS in a graphical form and will tape the wave lengths on the tracing. It is also possible at the same time to visualize the tracing of the stellar spectrum, not yet reduced, by means of a recorder at the same time in which it is punched on the tape.

The most interesting technical details of the ADM are the following: Spectrum plates up to 25 cm in length are centered on a semikinematic plate carriage which can be moved in abscissa by means of a precision screw turned by a variable speed motor or by hand. A double illuminator provides the projection on the plate of an image of a slit adjustable in width and height and the projection of a circular field to control focusing on the explored range. With a small microscope the origin of abscissas can be read on the carriage. Plates can be adjusted in y and rotated around the photometer axis. Transmission on the plate is read by means of a photometer which sends its information to a recorder and to a digital voltmeter. The photometer has a separate voltage supply. The abscissas on the plate carriage are read through the angle of rotation of the leading screw; an optical digitizer connected to it gives an electrical pulse every 2 thousandth of a turn. Pulses are sent to an up-down counter which so accumulates the information on the position of the plate carriage. Hand selection on the u-d counter provides a trigger pulse every 2, 4, 8, 20, 50, 100 μ of carriage motion. The trigger pulse gates the transfer 'in flight' of the number contained in the u-d counter and in the digital voltmeter to a buffer memory, from which decimals are read out by the serializer one by one and sent to a fast, punched-tape printer. All electronic blocks have a voltage supply suitable for their requirements. The printer speed is 30 characters/sec; this is the actual limit of the speed of the system; after a successful operating of the whole system it could be changed to a magnetic tape, the speed limit being now imposed by the digital voltmeter which cannot give more than about one thousand values/sec without a considerably improved design.

Intensity instead of transmission can be recorded by means of a wedge device equalising the transmission of the photometer with that of the calibration spectrum. This will be done only when speed of read-out will not impair the time response of the servo-equaliser. To the main system is added a decoding facility to write down reduced spectra obtained from computers in punched tape form. It consists of a tape reader connected to a digital-analog converter. Its output enters a paper recorder; selected wave lengths are written by means of marks superimposed on the spectrum profile.

Riassunto. Allo scopo di ridurre il tempo necessario per le lunghe e laboriose operazioni richieste per uno studio quantitativo degli spettri stellari, e di aumentare la precisione delle misure, è stato progettato un microfotometro automatico digitalizzato che perfora su nastro le trasparenze e le corrispondenti posizioni ogni 2 μ lungo l'intero spettro. Nel presente lavoro vengono forniti i dettagli costruttivi dello strumento.

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Centro di Astrofisica del C. N. R., Osservatorio Astronomico di Merate (Como, Italy), January 22, 1962.

A Radiometric Method for the Quantitation of Experimental Inflammation and Anti-Inflammatory Activity

Methods for the evaluation of anti-inflammatory activity may be classified into two groups: (a) those based on the production of physiological *in vivo* changes (e.g., eosinopenia) by the antiphlogistic agents, and applicable primarily to the evaluation of corticosteroids; (b) those based on the prevention or reduction of inflammation produced experimentally by a variety of noxious chemical agents or physical forces, which are applicable to the evaluation of non-hormonal as well as hormonal antiphlogistic compounds.

Artificial models for the evaluation of anti-inflammatory activity are generally based on a major component of the inflammatory process, namely the seepage of plasma into the inflamed focus. Accurate measurement of this fluid shift is a limiting factor in current assay techniques. A radiometric tracer method was developed which enables quantitation of the degree of inflammation produced by a phlogogenic agent and the extent of protection afforded by non-hormonal compounds.

Radio-iodinated (I^{131}) serum albumin (RISA), 0.1 ml, was injected into a tail vein of fasted (12 h), 24–28 g, male Swiss-Webster mice. 30 min later, 20–40 μl of blood was withdrawn from the *sinus cavernosus* by means of a micropipette, transferred immediately to a tared 10 × 75 mm Pyrex tube, allowed to coagulate and weighed. This sample was used to determine the radioactivity per μl of blood (sp. gr. 1.052). 90 min after the RISA injection, an inflammatory response was induced by a modification of the method of Kelemen[1]. An amount of 5-hydroxytryptamine creatinine sulfate, equivalent to 0.4 μg of 5-HT base, dissolved in 0.05 ml of 0.9% NaCl solution, was injected into the plantar surface of the left hind paw of the mouse; the right hind paw was injected with 0.05 ml of saline ($^1/_2$ inch, 27 gauge needle). 1 h after the injection of 5-HT, the animals were sacrificed by immersion in an acetone-dry ice mixture (approximately −70°C), and the hind paws were removed by severing at the ankle. Each paw was placed in a separate tared tube and weighed. The radio-activity of each sample was determined by means of a scintillation well-counter and a Baird-Atomic Pulse Height Analyzer at the I^{131} γ peak of 0.360 Mev. Counting times were of sufficient duration to obtain at least 2000 counts. Inflammatory response was expressed as a function of the increase in inflammatory exudate of the 5-HT injected-paw as opposed to the saline-injected paw. Volume of 5-HT inflammatory exudate per g of tissue (μl/g) = [activity per g of *left* paw (cpm/g) − activity per g of *right* paw (cpm/g)] ÷ [activity per μl of blood (cpm/μl)].

Preliminary studies revealed that the inflammatory response to varying doses of 5-HT (10^{-3} to 10 μg calculated as the base) resulted in a sigmoid curve ($P < 0.01$); the linear portion of the curve fell between 0.1 and 0.8 μg. The response to 0.1 μg of 5-HT did not differ significantly from saline, but doses of 0.2, 0.4, and 0.8 μg were significantly phlogogenic, and differed between themselves ($P < 0.05$ in each case). The 0.4 μg dose of 5-HT was selected for use in subsequent studies, since it produced a significant increase in plasma exudate with the least variation and cor-

Tab. I. Inflammatory response, expressed as μl of plasma exudate per g of tissue, induced by 5-hydroxytryptamine in the mouse hind paw. Radio-iodinated (I^{131}) serum albumin (0.1 ml i.v.) was used to trace the extent of plasma exudate

Section A	Effect in mice sacrificed 1 h after injection of various doses of 5-HT in 0.05 ml of saline	
5-hydroxytryptamine μg	No. of mice	Plasma exudate (μl/g) mean ± S.E.
0	20	8.7 ± 7.4
0.1	22	17.2 ± 10.6
0.2	20	79.6 ± 13.0
0.4	18	107.2 ± 11.8
0.8	18	152.4 ± 17.2
Section B	**Effect in mice sacrificed at various time intervals after injection of 0.4 μg of 5-HT in 0.05 ml of saline**	
Time interval between injection of 5-HT and removal of paw min	No. of mice	Plasma exudate (μl/g) mean ± S.E.
30	18	163.7 ± 9.8
60	19	127.1 ± 13.4
90	17	87.1 ± 8.2
120	18	92.6 ± 8.1
150	18	89.5 ± 10.5

Table II. Reduction by sodium salicylate of inflammatory exudate induced by 5-hydroxytryptamine in the mouse hind paw. Animals were sacrificed 6 h after administration of sodium salicylate and 1 h after injection of 0.4 μg of 5-HT in 0.05 ml of saline

Sodium salicylate mg/kg, *per os*	No. of mice	Plasma exudate (μl/g) mean ± S.E.	Mean % reduction of plasma exudate	P
0	44	125.7 ± 9.8		
50	21	99.5 ± 11.4	20.7	< 0.05
100	18	96.4 ± 12.2	23.3	< 0.05
200	18	80.6 ± 12.2	36.9	< 0.001
400	20	55.4 ± 11.6	56.0	< 0.001

[1] E. Kelemen, *Permeability in Acute Experimental Inflammatory Oedema* (Publishing House of the Hungarian Academy of Sciences, Budapest 1960).