# Effects of Sexual Activity on Beard Growth in Man

DURING the past two years I have had to spend periods of several weeks on a remote island in comparative isolation. In these conditions I noticed that my beard growth diminished, but the day before I was due to leave the island it increased again, to reach unusually high rates during the first day or two on the mainland. Intrigued by these initial observations, I have carried out a more detailed study and have come to the conclusion that the stimulus for increased beard growth is related to the resumption of sexual activity.

Beard growth was measured quantitatively by collecting and weighing the shavings from the head of a Philips Philishave razor after a single shave once every 24 h. Activity data were recorded on a 0–5 scale with respect to physical and mental exercise, nervousness, sleep, libido and intercourse.

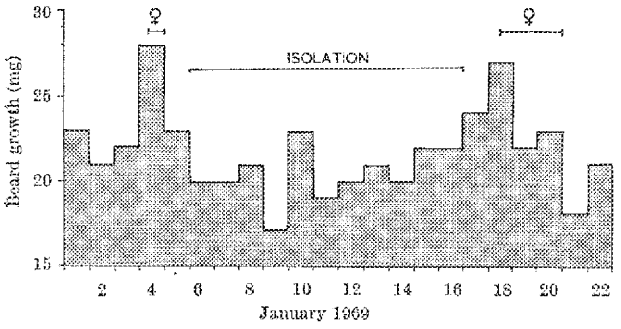


Fig. 1.

Fig. 1 illustrates the changes in beard growth during a short stay on the island. The day of return to the mainland and the initial resumption of sexual activity produced a most marked increase in beard growth, although growth subsequently declined fairly rapidly to baseline rates. If sexual activity was maintained for a week or more, then beard growth would still decline to normal rates within 4–6 days; resumption of sexual activity after only 2–3 days' abstinence was enough to restimulate beard growth. Even the presence of particular female company in the absence of intercourse, after a period of separation, usually caused an obvious increase in beard growth.

Perhaps the most interesting feature of these changes was the way the increase in beard growth anticipated the resumption of sexual relationships. The longer the period of abstinence, the more obvious was the anticipatory response. Fig. 2 shows the mean beard growth ($\pm S.D.$) for ten different 10 day recording periods in which sexual relationships were confined to the weekend. The cycle is unmistakable; the Friday peak comprises an anticipatory response during the day and the effect of intercourse; the increased beard growth falls off by Sunday, and by Monday it becomes smaller than on any other day of the week.

Although normal sexual relationships seem to have the most pronounced effects on beard growth, other factors are also of importance. Increasing the number of shaves in a day leads to a considerable apparent increase in beard growth, although decreasing the frequency of shaving did not necessarily have the opposite effect. Tension, anxiety, nervousness, excessive mental fatigue and alcohol consumption were all associated with increased beard growth, while excessive physical exercise and high ambient temperatures seemed to inhibit growth. The amount of sleep, type of food eaten and degree of libido were without effect.

Hamilton[1], in a comprehensive account of the effects of genetics, age and hormone levels on beard growth in man, stated that beard growth could be used as a bioassay

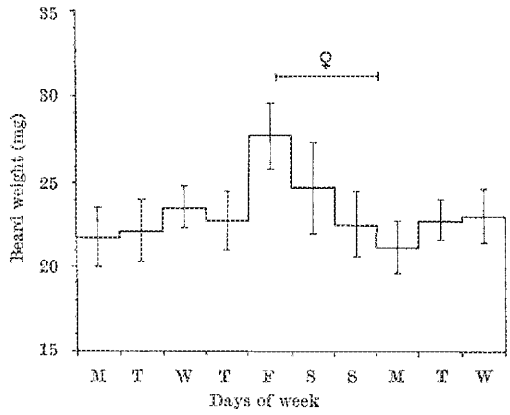


Fig. 2.

for androgens because it was exclusively under testicular control. An attempt was therefore made to correlate the rate of beard growth with a known index of androgenic activity, the rate of sebum production by the sebaceous glands of facial skin[2]. The results are shown in Fig. 3; in general, there was good agreement between these two indices of androgenic activity.

A variety of compounds, including testosterone, methyl testosterone, androsterone and cortisone ($2 \times 10$ mg/day), were taken sub-lingually and beard growth changes measured. All the samples were coded and placebos were also included. The results show that all the androgens had a stimulatory effect on beard growth, androsterone producing the greatest increase. The changes were of the same order of magnitude as the increases associated with intercourse. Although the placebos were without effect, cortisone also stimulated beard growth, indicating that the beard may respond to other hormones.

In conclusion, it seems that beard growth in man is a much-neglected parameter of hormone activity that can readily be quantified. This study would suggest that the changes in beard growth in relation to everyday activities may reflect changes in the endocrine activity of the gonads or adrenal cortex. The fact that the beard shows a marked circadian rhythm of growth with a peak between 0800 and 1300 h, similar to the circadian rhythm of cortisol secretion, might suggest a functional interrelationship. Because the beard is a secondary sexual character developed under the influence of testosterone at puberty, however, it might be expected to retain a particular sensitivity to androgens. The pronounced effect of sexual intercourse on beard growth may therefore be caused by an increase in testosterone secretion, which is known to

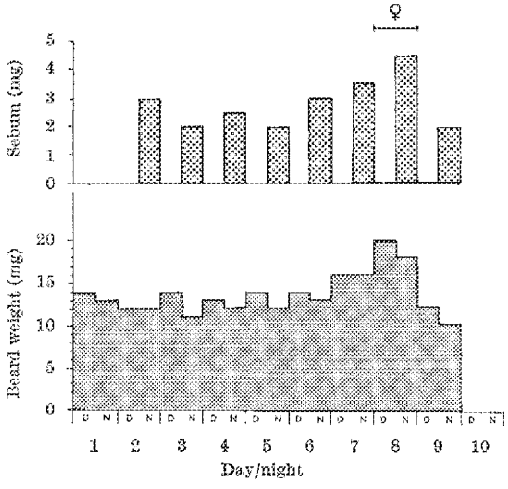


Fig. 3.

occur in response to coitus[3]; there is a 5–8 day cycle of testosterone secretion, and a rather similar 5–6 day cycle is sometimes apparent in beard growth.

Changes in beard growth may well indicate changes in androgen secretion in man, related to sexual behaviour, in that they suggest a release of androgen in anticipation of intercourse, a decline in androgen secretion with continued sexual activity, and hypersecretion of androgen in response to intercourse after prolonged sexual abstinence.

ANON

The identity of the author of this communication has been suppressed for reasons which may be self-evident, but the author, whose work has been vouched for by a colleague, has answered a number of questions raised by a referee.

EDITOR, *Nature*

Received January 15, 1970.

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## Efficiency of Grass Carp (*Ctenopharyngodon idella* Val.) in controlling Submerged Water Weeds

THE Asiatic grass carp is a herbivorous fish which is being bred and extensively cultured for food in Russia and eastern Europe. In Britain where freshwater fish are seldom eaten, apart from eels and salmonids, grass carp are arousing interest because of the possibility of using them as a supplement, or in some situations as an alternative, to present methods of weed control—mechanical cutting or the use of herbicides[1]. The chief factors involved in the possible use of grass carp have been discussed[2,3], one of the most important being the density of fish needed to achieve a desired degree of control. We report here the work done on this topic in 1969.

Nine similar and adjacent ponds, each 0·025 hectares in size and about 0·8 m deep, were cleared of indigenous fish by using rotenone. The rather heterogeneous weed growth present was sampled by means of a grapnel at regular intervals along evenly spaced transects and recorded as relative frequencies, that is, the number of samples in which submerged weeds appeared as a percentage of the total number of samples per pond. Between forty-five and fifty-five samples were taken at each pond.

A stock of grass carp had been obtained in April 1968 from Hungary, where they were hatched in June 1967. After the first weed sampling the fish were introduced into six of the nine ponds on May 21 at the rates of 238, 241, 242, 484, 716 and 959 kg/hectare. The mean weight of individual fish was 168 g. Subsequent assessments of weed abundance were made in July, August and September.

In initial approximate order of abundance the submerged plants present were: *Myriophyllum verticillatum*, *Callitriche* sp., *Lemna trisulca*, *Potamogeton pectinatus*, *Zannichellia palustris* and *Ceratophyllum demersum*. The emergent and chiefly peripheral species were *Typha latifolia*, *Sparganium erectum* and *Alisma plantago-aquatica*. Although not all these species were present in each pond, when they occurred in ponds stocked with grass carp they were all grazed.

During the summer all species of weed in the ponds containing the fish decreased while the weed density in the three control ponds increased to a mean value of 110 per cent of the original. In the most heavily stocked pond the relative frequency of submerged weeds decreased from eighty-four in May to eighteen in August when plant roots—presumably pulled up by the fish—were seen floating on the water; it was clear too that the

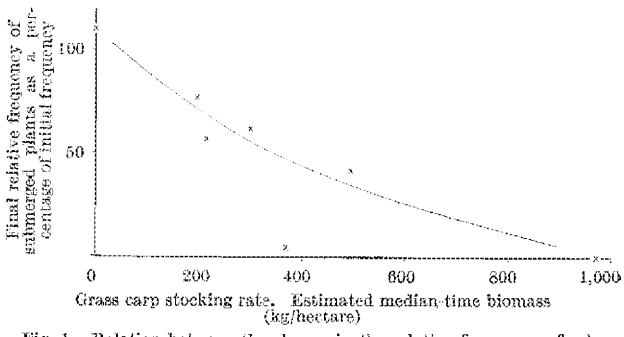


Fig. 1. Relation between the change in the relative frequency of submerged weeds from May to September and the grass carp stocking rate.

lowermost leaves of *T. latifolia* had been eaten. By September all traces of submerged plants had gone and all the *T. latifolia* leaves touching the water had been attacked by the fish. Grass carp are known to prefer some plants to others[4–7], and our results suggest that *Callitriche* sp. was preferred to *M. verticillatum*, but the initial variation in plant population between ponds and the method of assessment did not permit a reliable comparison.

On September 22 and 23 the grass carp populations were estimated by a mark-recapture method and the fish were subsequently removed, weighed and measured. Mean survival was 61 per cent with a range of 34 to 97 per cent and the mean weight increment was 37·8 g (7·7–139 g).

From the initial stocking figures and the final numbers and weights of fish, a median-time biomass was estimated for each pond, assuming growth and mortality to have been linear and exponential respectively. The values obtained are plotted in Fig. 1 against the September relative frequencies of submerged weed expressed as a percentage of the May values and give a reasonably good curvilinear relation. The very low point in Fig. 1 is believed to be due to the fact that the initial plant population was low in this pond and consisted chiefly of *Callitriche* sp., which is not only readily eaten by grass carp but also tends to die back as the summer progresses as it did in the control ponds.

Thus in the summer of 1969 at a site where the daily mean water temperature was 15·8° with a range of 8·5° to 21·5° C, and with plants which are readily eaten, a stocking density giving a mid-season biomass of approximately 300 kg of 2 year old fish per hectare reduced plant growth to about 50 per cent of its potential. In the conditions of the experiment this mid-season biomass would, it is estimated, have required an initial stocking rate of 343 kg/hectare.

We thank the Deeping Fen, Spalding and Pinchbeck Internal Drainage Board and the Welland and Nene river authority for facilities for this work.

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Received March 16, 1970.

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