

Ahmad, M. and A. Rahman. Use of **mammalian** sex

hormones to improve fertility in crosses.

Ahmad et al. (1967 Neurospora Newsl. 11: 19) improved fertility in crosses of some lysine-5 mutants of *N. crassa* by using mycelial extract from a highly fertile cross, **Em a (5297) x Teu-1 (33757) A**. They used the **mycelial extract** assuming that one or more hormones required for **sexual** reproduction might be lacking or produced sub-minimally in the lysine-5 mutants.

Since the preparation of the mycelial extract is a time-consuming process, we investigated whether or not some of the commercially available male and female mammalian hormones improve the fertility of crosses of lysine-5 mutants. The hormones used were methyl testosterone, ethyl testosterone, testosterone propionate, testosterone and progesterone. Concentrations of 12.5, 25, 50, 100, 200, 300, 400 and 800 parts per million of these hormones were prepared and 6 drops, of each of these concentrations, were put into crossing tuber 4-6 hours before the crosses were made.

Out of the five hormones used, the male hormone, testosterone, and the female hormone, progesterone, gave the best results. Secondly, a hormone concentration of 50 parts per million gave the optimum improvement in the fertility of the crosses. Hence, in further experiments solutions of only these two hormones, in concentrations of 50 parts per million, were used.

It was then investigated whether testosterone or progesterone or a mixture of the two hormones (testosterone 25 parts per million and progesterone 25 parts per million) would give the maximum improvement in fertility. Six crosses were made and each cross was carried out under four different conditions as shown in Table 1, column 1.

The data, as recorded in Table 1, show that the simultaneous employment of both testosterone and progesterone gives the best fertility. Hence, further experiments were done using 6 drops of a solution containing 25 parts per million of each of the hormones, testosterone and progesterone.

Finally, an investigation was conducted to find out whether the mycelial extract or the two mammalian sex hormones were better for improving the fertility of lysine-5 mutants. Eight pairs of mutants were crossed for this purpose. The data in Table 2 show that the mixture of the two hormones effected a greater improvement in fertility than the mycelial extract by giving larger and more numerous perithecia and more frequent, earlier and better spore shedding.

Table 1. Effect of mammalian hormones on crosses of lysine-5 mutants.

Treatment	Abundance of spore shedding (in number of crosses)		
	None	Plenty	Abundant
None	6	0	0
Testosterone	5	1	0
Progesterone	4	2	0
Testosterone + progesterone	3	2	1

Table 2. Superiority of mammalian sex hormones over mycelial extract in improving fertility.

Treatment	Perithecia					Spores											
	Sire			Frequency		Days taken for shedding						Abundance of shedding					
	small	Medium	Large	Medium	High	21	22	23	24	25	28	no'	shed	Poor	Plenty	Moderate	Abundant
Mycelial extract	0	2	6	5	3	0	0	0	1	4	1	2		4	2	0	0
Testosterone + progesterone	0	0	8	0	8	1	2	1	1	2	1	0		0	5	2	1