

## SCK-7 - COMMERCIAL SIX-DAY LIFE BOAR SEMEN EXTENDER - A REVIEW.

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Reed (1981) has outlined the main reasons for the use of A.I, namely a) the genetic improvement of live-stock of nucleus and commercial level; b) assistance in maintaining high health status; c) facilitation of batch farrowing procedures; d) cheapness and convenience compared with natural service, and e) exchange of genetic material between countries. However, a major problem has been the comparatively short life of the semen. Using diluents such as IVT and Kiev reasonable conception rates only extend to about 60 hours (Taylor, 1976). SCK-7 diluent has been developed to extend this semen life to at least six days and is now used commercially in three countries in Europe (Belgium, Spain, UK). There have also been trials in other countries, but there are few reports in the literature and several of these draw misleading conclusions.

Fischer-Pereira Cunha (1979) compared SCK-7 with Kiev at days 1 and 2 after collection. SCK-7 had a higher farrowing rate but lower numbers of pigs born. However, SCK-7 was also used at days 3,4,5 with farrowing rates of 57.3, 69.0 and 59.3 respectively.

Swensson (1977) reported two trials - in the first, farrowing rates and numbers of pigs born alive for IVT diluent for days 1-3 were 65.3 and 10.9 respectively and for SCK-7 for days 5-6 were 44.8 and 9.1. In the second trial, the farrowing rate for IVT over days 1-3 was 88.3, while for SCK-7 on days 4,5 and 6 the farrowing rates were 83.0, 82.0 and 80.0 respectively. On the basis of these latter figures we totally refute Swensson's claim that "SCK-7 does not maintain good sperm motility up to 5-6 days".

Paquignon, Bussiere, Bariteau, Le Maignant de Kerangat and Courot (1980) reported conception results, based on the non-return rate at 54 days, in sows and gilts inseminated with BL1 or SCK-7 diluent. BL1 diluent used on days 0 (day of collection) to 2 gave a mean conception rate of 71.0, while SCK-7 used on days 3-6 gave a mean of 63.5. Based on these results, the authors stated that "contrary to the claims made SCK-7 diluent does not maintain the fertilizing capacity of spermatazoa for an extended period of time". We refute this statement on the basis of the reported results. It is also worth noting that the trial was conducted with SCK-7 diluent that had been stored for 5 months prior to use whereas the BL1 diluent was probably freshly prepared.

There are two reports of in vitro trials with SCK-7. Le Maignant de Kerangat (1979) showed lowered numbers of live spermatazoa in SCK-7; again the diluent was stored for five months prior to use. However, Brunel, Ghiandoni and Crimella (1977) reported results which "showed the considerable advantage of SCK-7 diluent". Ejaculates from four boars were split and diluted in Kiev and SCK-7 diluents. Motility readings were taken from day five onwards, and the material was considered viable if the material showed at least 50% residual motility. In Kiev, all boars were 'unviable' by day 9, whilst in SCK-7 all boars were 'viable' up to day 10, and three still 'viable' on days 11 and 12. Supravital colouration data showed a mean values on day 9 of 24.3 and 74.9 for Kiev and SCK-7 respectively. By day 12, the SCK-7 mean was 73.4.

In vitro comparison of SCK-7 with IVT has been undertaken in two previously unpublished trials. In the first, split ejaculate semen doses were processed and evaluated until spermatazoa in the samples were

completely dead. Doses were revived using hanging drop technique with a microscope heating stage set at 31°C. In four separate experiments, the mean survival rate of the spermatazoa was 5 days longer for SCK-7. In the second trial, split ejaculate doses were processed and evaluated on a combined scale from 0-18 points base on the numbers of active spermatazoa (100% = 9 points, 0% = 0 points) and motility (0-9 scale). Mean values at days 7,13 and 16 were 11.7, 9.0 and 8.3 for SCK-7 and 8.3,3.3 and 2.7 for IVT respectively.

Commercial results for SCK-7 are now available from the UK, Spain (Ge-Pork, personal communication) and Belgium (Delaunois, personal communication) on large numbers of inseminations. These are presented in Tables One-Three.

Table 1: Farrowing % by day of semen use

	1	2	3	4	5	6	7
U.K.	81.0	77.7	76.5	73.7	71.7	69.8	
BELGIUM	78.1	78.5	74.7	72.1	74.3	64.1	54.8
SPAIN	81.7	81.8	79.3	78.1	74.9	72.9	
	8	9	10	11			
U.K.	65.1	78.3	84.2	66.7			

Table 2: Pigs born by day of semen use

	1	2	3	4	5	6	7
U.K.	10.9	10.6	10.5	10.4	10.2	9.8	
BELGIUM	9.1	9.2	8.8	8.0	8.6	8.5	9.5
SPAIN	10.4	10.7	10.1	10.1	9.6	9.4	
	8	9	10	11			
U.K.	10.2	10.3	9.8	10.7			

Table 3: Number of sow records used in Tables 1 and 2

	1	2	3	4	5	6	7
U.K.	16933	12612	8746	6077	2476	593	
BELGIUM	2594	3197	1072	1033	397	167	42
SPAIN	1072	1070	776	526	171	170	
	8	9	10	11			
U.K.	175	46	9	2			

The presented results suggest that SCK-7 has valuable properties in extending the life of boar semen to at least 6 days and probably considerably further, though the latter is of questionable commercial value.

Selected references: Brunel, L., Ghiandoni, R and Crimella, C: Anim.Husb. and Vet. Review. 1977, 5; Fischer-Pereira Cunha, A.R. D.V.M. Thesis, 1979, Freie Universitat, Berlin; Le Maignant de Kerangat, G: Memoire de fin d'etudes, 1979, INRA; Paquignon, M., Bussiere, J., Bariteau, F., Le Maignant de Kerangat, G and Courot, M: Journees recherche porcine en France, 1980, 12:157; Reed, H.C.B: Control of Pig Reproduction, 1981, 34th Easter School in Agric. Science, University of Nottingham, U.K; Swensson, T: Svinskotsel, 1977, 67: 29; Taylor, L.J.T: Pig International, 1976, 1.