INTRODUCTION: 

Axen and unique vaccine for transmissible gastroenteritis (TGE) in swine has been developed by Ambico Inc. 

Viral TGE virus, when fed to pregnant sow overcomes the disadvantages of the IM administered vaccine. However, even virulent TGE virus will not produce adequate immunity if injected IM or intranasally into the sow. It is apparent that infection or sensitization of the gastrointestinal tract of the sow is necessary to achieve good protection in both the sow and her nursing pigs. 

The fact that virulent TGE virus, administered orally to sows, does produce substantial immunity in both sows and their nursing pigs has been utilized commercially in some States (Illinois, Missouri). Virulent virus is harvested from the intestines of infected baby pigs. Centrifuged for partial purification, and incorporated into large hard gelatin capsules which are then frozen and stored in the frozen state. One capsule is administered per pregnant sow about three to four weeks before farrowing. 

This procedure, however, is hazardous since the disease can be perpetuated or disseminated to other swine herds. In addition, contaminating viruses may also disseminate from there to any control measures or assurances that the intestinal tract of the donor of the disease free.

In order to avoid the hazards and disadvantages of the above two immunization approaches, efforts at Ambico Inc. have been directed toward the development of a vaccine which might possess the following characteristics:

1. The vaccine virus should preferably be live and not capable of producing disease when fed to inoculated baby pigs (the most sensitive animal model available).

2. The virus should possess certain qualities which would allow its incorporation into feed for oral consumption by swine of all ages.

3. The vaccine virus should not only produce a high titer in the sows' gut to TGE, but also reduce the sows to develop a strong persistent protective milk which prevents morbidity and mortality from TGE in her nursing pigs.

4. The vaccine virus should be capable of inducing resistance to TGE when fed to young pigs before weaning, even though the pigs are nursing TGE immune sows.

SUMMARY: 

The TGE vaccine developed by Ambico, Inc. consists of a live strain of TGE virus, originally virulent for baby pigs, but which has been modified so that it no longer causes disease in swine. The strain of TGE virus utilized in vaccine studies consists of isolates from intestinal contents of infected baby pigs, when they are propagated in cell culture they may lose some of their ability to produce disease, but they are generally not suitable vaccine agents.

The Ambico strain of virus has been aptly treated and purified prior to its extensive testing in animals and in field conditions. It was determined that virulent TGE vaccine would be dependent on the same conditions prior to its evaluation under field conditions. In addition, to the above animal studies extensive laboratory in vitro testing has also been done in order to confirm purity of the vaccine.

2. Vaccine efficacy. Efficacy of TGE vaccine was also determined under controlled laboratory conditions prior to its evaluation under field conditions. Pregnant sows were vaccinated within five to six weeks of farrowing with Ambico vaccine or the commercially available vaccines recommended for intramuscular use. After farrowing all sows and half of each litter of pigs were exposed to virulent TGE. Sows which received Ambico vaccine were protected from TGE and they provided excellent milk protection to their baby pigs. These results were clearly superior to the results observed in sow which had received the intramuscular vaccine. The latter vaccine did reduce morbidity of the baby pigs, but did not prevent sow or baby pigs morbidity. These results were very similar to observations reported by the other laboratories.

Milk samples from both groups of sows were analyzed for TGE antibody levels and the results were obtained from the full experiment results. 

In particular significance in our studies was the observation that milk antibody titers in orally vaccinated sows were substantially higher after vaccination than milk antibody titers observed in intramuscular vaccinated.

Vaccine can also be used after to actively immunize baby pigs even while they are nursing TGE immune sows. This is advantageous so that pigs can be immunized actively before they are weaned since they normally lose their passive protection at that time.