LIPID COMPOSITION OF SARCOLEMML MEMBRANES OF STRATIFIED MUSCLE
IN RELATION TO STRESS-SUSCEPTIBILITY IN BELGIAN LANGUAGE PIGS.
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In recent years, a bulk of literature has been published on Ca++ and the related Mi syndrome which develops after administration of volatile anaesthetics of which halothane is the most common. It is now generally accepted that a post-synaptic Ca++-sensitive muscular rigidity during MI. The central role played by external Ca++ in the pathogenesis of MI has been demonstrated in vitro in MI muscle by palpation and caffeine has been described previously (1). Caffeine is known to induce contractions on isolated striated muscle strips, whether by its action on sarcoplasmic reticulum or by increasing the permeability of Ca++ through the sarcolemma.

In the experiments described here, the isolated sarcolemmal membrane fractions were tested for their calcium-sensitive 45Ca++-uptake and for their lipid composition.

MUTATIONS
Stress-susceptible (S) Belgian Landrace (RL) and stress-resistant (R) Large White (LM) pigs weighing 40-60 kg were used in all experiments. Muscle biopsies were taken from the m. semimembranosus and m. gracilis of pigs anaesthetised with 1.5 % thiopentone sodium as the only anaesthetic agent. Sarcolemmal membranes were isolated using strict precautions in 0.25 M NaCl (2). Na-K activated ATPase in the presence and absence of 2 mM ouabaine was measured at 37°C in ATP assay of Strapp and Strapp (2) and phospholipids were determined quantitatively after hydrolysis by phospholipase A, liberating free choline which was estimated colorimetrically (Nakao-Japan). Cholesterol was determined after hydrolysiss with cholesterol hydrolyse (Nako-Japan). Glyceral was analyzed enzymatically after alkaline hydrolysis using a commercial KMO (Rohgencher Mannheim Diagnostica).

The relative composition of the phospholipids was determined after precipitation in ice-cold acetone, dissolved in chloroform and separated by TLC. The fractions were viewed under UV light after spraying with an aqueous solution of 0.01 % o-toluidino-2-naphtol-5-sulfonate and esti- mated after scanning densitometry.

Total lipids (TCL) were extracted from the sarcolemmal membranes of m. semimembranosus and m. gracilis of 5 R and 5 S pigs with chloroform-methanol (2:1). The Total Fatty acid composition (TFA) and the composition of fatty acids liberated after treatment of the total lipids with lipase (FPL) were determined by TLC-GC (3). From the TCL and the FTA the proportion of fatty acids liberated by lipase (PL) was calculated as

\[ \text{PL} = \frac{\text{TFA}}{\text{FPL}} \cdot \frac{2}{3} \cdot 100 \]

RESULTS
Na-K ATPase of sarcolemmal membrane fractions isolated from m. gracilis and m. semimembranosus, and its inhibition by ouabaine, is very similar in resistant LM and sensitive RL pigs. No significant differences were observed between the total activities nor between the ouabaine inhibited activities. A relatively important variation is common for all isolates and is probably due to the presence of foreign proteins in these relative impure preparations.

The relative low inhibition by ouabaine - a value of 27% - was to be expected - is probably due to the same causes.

The quantitative analysis of lipids in the iso-