



Wellcome Images

Crystals of Stearic acid (a saturated long-chain fatty acid found in animal fat) and a full English breakfast.

Smedley's research focused on the structure and metabolism of fats.

All images © Wellcome Images and reproduced with permission.



Wellcome Images

Research on Fats

Fat metabolism provided the focus for Ida Smedley's science. In 1912, when she was already an established scientist and when the new Biochemical Club was reconsidering its decision to exclude women members, she published a systematic re-investigation of the fatty acid composition of butter.¹ Contrary to previous claims, this showed the presence of straight chain fatty acids only (with no branched chains) and showed that unsaturated fatty acids were present in addition to the well-characterised oleic acid.

The work confirmed that only fatty acids with even numbers of carbon atoms were present, and in the following year Smedley published a prescient analysis of possible pathways by which these fatty acids might be biosynthesized.² She speculated that pyruvic acid derived from carbohydrate breakdown was the precursor and that this could lose a molecule of carbon dioxide to generate a 2-carbon fragment ('active acetaldehyde') which could be used to extend a growing fatty acid chain through a series of condensation, dehydration and reduction reactions. It was many years before this scheme was basically confirmed and the nature of the 'active acetaldehyde' was established as being acetyl-CoenzymeA.

Other articles that Smedley published in the *Biochemical Journal*, focused on fat metabolism in yeast. These publications helped to establish the relationship between the metabolism of fats, carbohydrates and proteins.

Smedley summarised her findings in *Metabolism of Fat*, which she published in 1943. This was her first solo monograph, although she had earlier co-authored a revised edition of *Lecithin and Allied Substances* (1927) with her husband **Prof Hugh MacLean**.

¹ Ida Smedley, 'The Fatty Acids of Butter', *Biochemical Journal* **6** (1912), 451-461.

² Ida Smedley and Eva Lubrzynska, 'The Biochemical Synthesis of Fatty Acids', *Biochemical Journal* **7** (1913), 364-74.