

KONDO LABORATORY.

(Director : Dr. Kinsuke Kondo, Professor of Chemistry of
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In the Kondo laboratory the research is carried on in the following three divisions :

- (1) Chemistry of Food and Nutrition.
- (2) Chemistry of Proteins.
- (3) Utilization of Soy-beans.

The works done in these three divisions are classified and summarized as follows :

(I) Chemistry of Food and Nutrition.

In this division the chemical compositions of various common fruits, fishes and shell-fishes, which are commonly eaten in Japan, were analysed separately according to sex, age, season and habitat ; and the specialized tasteful substances in these foodstuffs were considered.

The nutritive values of the lunches in the popular restaurants in Osaka were determined and some useful hints as to nutrition of the citizen were given.

The nutritional significance of tryptophane and lysine were studied, and based on results of experimental feeding, "General Rule for Nutrition" was proposed. At one time, a complete food was manufactured, which was named "Eiyogen" (meaning the complete source of human nutrition). It contained all the necessary nutrients in the best available form and was excellent in taste, durability and portability.

Besides the above mentioned studies the mineral substances in cow's milk and goat's milk through one whole lactation period were determined, and the fluctuation of the minerals in milk was explained. The catalogue of the published papers in this division is as follows :

1. The Differences in the Chemical Composition of the Porgy-Meat in a Few Regions.

Yasu Hatakoshi.

Journ. chem. Soc. Japan, **53**, 824 (1932).

2. The Age of Porgy and the Meat Composition.

Yasu Hatakoshi.

Ibid., **54**, 852 (1933).

3. The Sex of Porgy and its Meat Composition.

Yasu Hatakoshi.

Ibid., **54**, 982 (1933).

4. Fractionation of the Porgy-Meat-Protein.

Yasu Hatakoshi.

Ibid., **56**, 221 (1935).

5. On the Composition of the Canned Meat of Crab (Chionoecetes Phalangium Fabr.).

Yasu Hatakoshi.

Ibid., **53**, 1026 (1932).

6. On the Composition of Some Lobster-Meats.

Kinsuke Kondo, Masanori Kubo and Kazuo Bando.

Journ. Agr. chem. Soc. Japan, **12**, 1077 (1936).

7. The Composition of the Bonito Meat and Some Characteristics of the Proteins of Bonito Meat (Katsuwonus pelamis (L.)).

Kinsuke Kondo and Torao Mihara.

Ibid., 1088.

8. Studies on the Composition of Meat of the Flat Fishes (Pseudor hombus cinnamomeus (T. & S.)).

Kinsuke Kondo, Kazuo Fujioka, Sakae Shinano and Hisateru Mitsuda.

Ibid., 1099.

9. Studies on the Composition of the Dried Meat of the Sea-ear and the Glycogenase of the Fresh Sea-ear (Haliotis gigantea Gm.).

Kinsuke Kondo and Sakae Shinano.

Ibid., 1221.

10. The Composition of Oysters. (*Ostrea gigas* and *Ostrea edulis*).
Wataru Shimizu.
Ibid., 5, 825 (1929).
11. On the Glycogenase of Oysters. 1 & 2.
Wataru Shimizu.
Ibid., 5, 895 and 951 (1929).
12. Nutritional Chemistry of Raw Food Substances.
1. On Banana.
Kinsuke Kondo, Michio Nakajima and Tetsuo Suzuki.
Memoirs of the College of Agr., Kyoto Imp. Univ., No. 6 (1928).
13. Nutritional Chemistry of Raw Food Substances.
2. On Water-Melon.
Kinsuke Kondo.
Ibid.
14. On the Compositions of Some Japanese Pears
and the Climate.
Kinsuke Kondo, Masayuki Suzuki and Katsukichi Shimada.
Journ. Agr. chem. Soc. Japan, 5, 911 (1929).
15. On the Carbohydrates of Some Japanese Pears.
Kinsuke Kondo and Toshio Ito.
Ibid., 918.
16. On the Organic Acids of Some Japanese Pears.
Kinsuke Kondo and Toshio Ito.
Ibid., 958.
17. On the Change of the Pear-Composition during
Cold-Storage.
Kinsuke Kondo and Toshio Ito.
Ibid., 963.
18. Nutritional Chemistry of Flowers. 1. Vitamins
and Proteins in Wistaria-Flowers.
Kinsuke Kondo and Sakae Shinano.
Ibid., 13, 467 (1937).

19. On the Growth of Animal, and Tryptophane and Lysine.

Kinsuke Kondo.

Journ. chem. Soc. Japan, **54**, 1198 (1933).

20. On the Nutritive Value of Some Lunches in the Popular Restaurants in Osaka.

Kinsuke Kondo and Kichinosuke Fujimura.

Collection of Lectures of Chem. Institute, Kyoto, Japan,
4, 103 (1934).

21. On the Most Adequate Forms of Nutrients.

Kinsuke Kondo, Kichinosuke Fujimura and Shigeki Mori.

Ibid., **3**, 33 (1933).

22. On the General Rule for Nutrition.

Kinsuke Kondo.

Ibid., **4**, 110 (1934).

23. On the Mineral Constituents of Cow's Milk.

Kinsuke Kondo and Shigeki Mori.

Journ. chem. Soc. Japan, **50**, 764 (1929).

24. On the Mineral Constituents of Goat's Milk.

Kinsuke Kondo and Shigeki Mori.

Ibid., **53**, 1163 (1932).

25. On the Fe-, Cu-, and Zn-contents in Milk.

Kinsuke Kondo and Shigeki Mori.

Ibid., **53**, 1190 (1932).

26. Quantitative Determination of Sucrose, Lactose and Invert Sugar in Sweetened Condensed Milk.

Kinsuke Kondo.

Ibid., **53**, 1150 (1932).

(II) Chemistry of Protein.

In this division the physical chemistry of proteins was studied. The proteins isolated and studied were rice-proteins, wheat-proteins, silk-proteins, milk-proteins, egg-albumins and others. The iso-electric behaviours, peptization-phenomena, refractive index and absorption

spectrum on the purified proteins were studied. Besides the above studies it was discovered that the proteins, though purified as much as possible, contained phosphorus, copper, iron and sugars as common constituents. The determination of sugars in protein by the application of the photo-electric cell was proposed.

The fluctuation theory of the bio-proteins was established experimentally. This confirmed that the bio-protein would fluctuate in its physical and chemical nature according to the different circumstances of its production, but that the genuine nature of the bio-protein was constant if the genus was the same.

In this division the following papers have been already published.

27. On the Fluctuation of the Bio-proteins (I).

Kinsuke Kondo.

Journ. chem. Soc. Japan, **54**, 386 (1933).

28. On the Fluctuation of the Bio-proteins (II).

Kinsuke Kondo and Takao Yamada.

Ibid., **54**, 399 (1933).

29. On the Fluctuation of the Bio-proteins (III).

Kinsuke Kondo, Takao Yamada and Hiromu Iwamae.

Ibid., **54**, 486 (1933).

30. On the Fluctuation of the Bio-proteins (IV).

Kinsuke Kondo, Masashi Murayama and Hiromu Iwamae.

Ibid., **54**, 904 (1933).

31. On the Occurrence of Phosphorus, Copper and Iron in Various Proteins.

Kinsuke Kondo and Shigeki Mori.

Journ. chem. Soc. Japan, **54**, 966 (1933).

32. Studies on the Absorption Spectrum of Wheat-Gliadin.

Kinsuke Kondo and Takao Yamada.

Ibid., **57**, 1250 (1936).

33. The Composition of the Loggerhead Turtle's Egg and the Physico-chemical Properties of its Albumin.

Kinsuke Kondo, Takao Yamada and Masao Nagashima.

Ibid., **58**, 108 (1937).

34. On the Dissolution-phenomena of Proteins.
Kinsuke Kondo.
Journ. chem. Soc. Japan, 53, 880 (1932).
35. The Behavior of Protein in Solution. I and II.
Kinsuke Kondo and Takao Yamada.
Ibid., 53, 898 and 945 (1932).
36. The Behavior of the Protein in the Iso-electric Solution.
Kinsuke Kondo and Shinichi Tomiyama.
Ibid., 53, 954 (1932).
37. On the Protein of the Canned Meat of Crab
(*Paralithodes Camtschatica Tilesius*).
Kinsuke Kondo and Hiromu Iwamae.
Ibid., 53, 1013 (1932).
38. The Isoelectric Behavior of Gliadin and the Concentration Rule.
Kinsuke Kondo and Masashi Murayama.
Ibid., 53, 1108 (1932).
39. On the Carbohydrate Contents of various Proteins.
Kinsuke Kondo and Masashi Murayama.
Ibid., 54, 351 (1933).
40. On the Refractive Index of the Hen's Egg-Albumin. I and II.
Kinsuke Kondo and Hiromu Iwamae.
Journ. Agr. chem. Soc. Japan, 13, 537, 546 (1937).
41. On the Isoionic Reaction of the Hen's Egg-Albumin.
Kinsuke Kondo and Hiromu Iwamae.
Ibid., 554.
42. The Colorimetric Method for the Determination of Carbohydrates in the Protein-Molecule.
(The Modified Sørensen's Method).
Kinsuke Kondo and Masashi Murayama.
Ibid., 473.

43. On the Colorimetric Determination by the Application
of the Photo-electric Cell.

Kinsuke Kondo and Masashi Murayama.

Journ. chem. Soc. Japan, 57, 772 (1936).

44. The Colorimetric Determination of Various Carbohydrates
by the Application of the Photo-electric Cell.

Kinsuke Kondo and Masashi Murayama.

Ibid., 57, 912 (1936).

(III) Utilization of Soy-beans.

As is well known, the soy-bean contains a very great amount of protein and oil. It has been used as foodstuff and food material.

The soy-bean oil cake also has been used as food material, fodder and manure, but its protein is famous in the manufacture of amino-acids (Taste-material) or plastics. In this laboratory the production of plastic and protein-fiber from the soy-bean protein has been studied during the past ten years and several methods are being patented.

The lipins and sterol-glucosides were isolated from the soy-bean oil residue and now their utilization in various directions is being studied.

Besides the patents the following papers were published :

45. On the Sitosterol-d-Glucoside of
Soy-Beans.

Kinsuke Kondo and Shigeki Mori.

Journ. chem. Soc. Japan, 57, 1128 (1936).

46. On the Jecorin of Soy-Beans.

Kinsuke Kondo and Shigeki Mori.

Ibid., 57, 1132 (1936).
