## NOTES

### NOTE ON HONEYCOMBING IN DECOMPOSED TUNA*

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In the paper entitled "Volatile Acids, Succinic Acid, and Histamine as Indices of Decomposition in Tuna," data on the occurrence of honeycombing as an index of decomposition was inadvertently omitted.

"Honeycombing" has been accepted, both by the producing industry and by various examining laboratories, as definite evidence of decomposition. The condition in canned tuna known as "honeycombing" is characterized by pitting of the meat, occurring sometimes on the surface of the cut of the meat, but more often in between the layers of fish flesh. In examining for honeycombing, it is necessary to

*Relationship between "honeycombing" and organoleptic classes of fish*[a]

PROGRESSIVE DECOMPOSITION STUDY

| SPECIES, PACK, AND REFERENCE | ORGANOLEPTIC CLASS | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| Skipjack Pack No. 1, Table 2 | 0 | 0 | + | |
| Skipjack Pack No. 2, Table 3 | 0 | 0 | 0 | + |
| Skipjack Pack No. 3, Table 4 | 0 | 0 | 0 | + |
| Skipjack Pack No. 4, Table 5 | 0 | 0 | + | + |
| Yellowfin Pack No. 1, Table 6 | 0 | 0 | 0 | 0 |
| Yellowfin Pack No. 2, Table 7 | 0 | 0 | + | |
| Yellowfin Pack No. 3, Table 8 | 0 | 0 | ++ | |
| Albacore Pack No. 1, Table 9 | 0 | 0 | + | + |
| Albacore Pack No. 2, Table 10 | 0 | 0 | + | |
| Albacore Pack No. 3, Table 11 | 0 | 0 | ++ | ++ |
| Bluefin Pack No. 1, Table 12 | 0 | 0 | + | + |
| Bluefin Pack No. 2, Table 13 | 0 | 0 | + | ++ |

BOAT SPOILAGE

| PACK NO. | ORGANOLEPTIC CLASS | HONEYCOMBED | PACK NO. | ORGANOLEPTIC CLASS | HONEYCOMBED | PACK NO. | ORGANOLEPTIC CLASS | HONEYCOMBED |
|---|---|---|---|---|---|---|---|---|
| 1 | 2–3 | 0 | 8 | 3 | + | 15 | 3 | + |
| 2 | 2–3 | 0 | 9 | 3 | + | 16 | 3 | 0 |
| 3 | 2–3 | 0 | 10 | 3 | + | 17 | 3 | 0 |
| 4 | 2–3 | 0 | 11 | 3 | + | 18 | 3 | + |
| 5 | 2–3 | 0 | 12 | 3 | + | 19 | 3 | + |
| 6 | 2–3 | 0 | 13 | 3 | 0 | 20 | 4 | + |
| 7 | 2–3 | 0 | 14 | 3 | 0 | 21 | 4 | 0 |

[a] 0 signifies no honeycombing; + signifies honeycombing; ++ signifies advanced honeycombing. Blank spaces indicate that no class was prepared in that pack.

* This note is intended to supplement the earlier article "Volatile Acids, Succinic Acid, and Histamine as Indices of Decomposition in Tuna," which appeared in *This Journal*, 39, 773 (1956).

pick apart the flesh carefully, and to make an inspection for the presence of characteristic irregular holes or pits penetrating more or less deeply into the tissue. The size of the honeycombed pits varies from rather small pits to areas covering an extensive portion of the flesh. A transverse section of an extensively honeycombed area has an appearance suggestive of an empty honeycomb. Honeycombing has been found to occur only when the raw fish used was in an advanced stage of decomposition. It is readily seen following the first cooking process at the cannery, and it is a general practice to discard at the cleaning table any precooked loins exhibiting honeycombing.

In the preceding tabulation, "Table 2, Table 3, etc." refer to tables of these respective numbers in the previous article. The organoleptic classes and pack numbers also refer to the data of the earlier paper.

No honeycombing was found in fish in the organoleptic classes 1 and 2. When the fish had reached advanced decomposition, represented by classes 3 and 4, honeycombing was generally (through not invariably) found.

The data submitted in the previous paper and in this note confirm earlier observations that honeycombing, when found, is a reliable index of the condition of the raw material.

## SELECTIVE ADSORPTION METHOD FOR DETERMINATION OF THE SUGARS OF HONEY—CORRECTION

By J. W. White, Jr. (Eastern Utilization Research Branch, Agricultural Research Service, Philadelphia 18, Pa.)

In the article with the above title which recently appeared in *This Journal*[1], Table 7 and the twelve lines of text following (page 474) should be changed to read:

Table 7.—*Shaffer-Somogyi titration of hydrolyzed sucrose solutions*

| SUCROSE IN 5 ML ALIQUOT OXIDIZED | 0.005*N* THIOSULFATE REQUIRED |
|---|---|
| *mg* | *ml* |
| 0.255 | 1.75 |
| 0.502 | 3.95 |
| 1.004 | 8.72 |
| 1.260 | 11.28 |

To determine sucrose in the carbon column eluate, 5 ml aliquots are subjected to the procedure described above, and the sucrose equivalent is read from a curve constructed from the data in Table 7. This value is doubled and from the product is subtracted the sucrose equivalent (from the curve) of the free reducing sugars in the solution before hydrolysis. This equivalent may be obtained from the maltose titer. To avoid an extra determination of free reducing value with a 15 min. heating period, the maltose titer (30 min. heating) is multiplied by 0.92 (determined experimentally) and then used. The difference is then the mg sucrose in 5 ml of the column eluate.

$$50(2S_1 - S_2) = \text{mg sucrose in 250 ml 7\% ethanol eluate} \qquad \text{(IX)}$$

where $S_1$ = mg sucrose equivalent to sucrose titer and $S_2$ = mg sucrose equivalent to 0.92 × maltose titer (*e* in equation VII).

[1] White, J. W., Jr., and Maher, J., *This Journal*, 37, 466 (1954).