Fisheries Journal, 15 (3), 1575-1583 (2025)
http://doi.org/10.29303/jp.v15i3.1502

THE HANDLING OF CAPTURED FISH ABOARD COLLECTING VESSELS AT NIZAM ZACHMAN OCEAN FISHING PORT, JAKARTA

Penanganan Ikan Hasil Tangkapan Diatas Kapal Penampung (Collecting) di PPS Nizam Zachman Jakarta

Irandha C. M Siahaan[1*], Lego suhono[2], Roy Linus Gawi Lewo[1]

[1]Study Program of Fishing Engineering, Kupang Marine and Fisheries Polytechnic, [2]Study Program of Fishing Engineering, Sidoarjo Marine and Fisheries Polytechnic

Kampung Baru Street, Ferry Port, Bolok, West Kupang District, East Nusa Tenggara

[*]Corresponding Author: irandha47@gmail.com

(Received April 13th 2025; Accepted June 20th 2025)

ABSTRACK

Fish handling is a series of procedures performed on fish without altering their fundamental characteristics. Proper handling results in high-quality fish products. Collecting vessels are a type of vessel specifically focused on collecting and handling fish catches. This study aims to understand the fish handling process on board receiving vessels and to determine the quantity of fish handled. The research was conducted on board the collecting vessel *KM. Fortuna VI*, which was docked at PPS Nizam Zaman, North Jakarta. The method used in this research was descriptive, by directly observing the fish handling process on board the receiving vessel. Based on observations during the study, it was found that fish handling on the receiving vessel involves several stages: preparation, handling, fish arrangement, freezing, and unloading on land. The types and proportions of fish handled were: skipjack tuna (59%), yellowfin tuna (36%), and scad (5%).

Keywords : *Fish Handling, Collecting vessel, the quantity and types of fish*

ABSTRAK

Penanganan ikan merupakan suatu rangkaian perlakuan yang dilakukan terhadap ikan tanpa mengubah sifat dasar dari ikan itu sendiri. Penanganan yang baik akan menghasilkan mutu ikan dengan kualitas mutu yang baik. Kapal penanampung merupakan salah satu dari jenis kapal yang fokus melakukan kegiatan penampungan dan penanganan ikan. Penelitian ini bertujuan untuk mengetahui proses penanganan ikan di atas kapal penampung, dan mengetahui jumlah ikan yang ditangani. Penelitian ini dilakukan di atas kapal penambung KM.Fortuna VI yang berlabuh di PPS Nizam Zaman Jakarta Utara. Metode yang digunakan pada penelitian ini yaitu deskriptif dengan mengikuti secara langsung proses penanganan ikan di atas kapal penampung. Dari hasil observasi selama penelitian diketahui bahwa penanganan ikan di atas kapal penampung terdiri dari tahap persiapan, penanganan, penyusunan ikan, pembekuan, dan

pembongkaran di darat. Sedangkan jumlah dan jenis ikan yang ditangani yaitu ikan cakalang (59%), ikan tuna sirip kuning (36%), dan ikan layang (5%).

Kata Kunci: *Penanganan ikan, kapal collecting, jumlah dan jenis ikan*

INTRODUCTION

Pelabuhan The Nizam Zachman Jakarta Ocean Fishing Port (PPS) is the largest fishing port in Indonesia and has a crucial role as a center for fishing, landing, processing, and marketing of fishery products. Located in the Muara Baru area, North Jakarta, this port is built on an area of ±71 hectares with a pier length of 2,272 meters and can accommodate more than 500 ships every month, including large ships (Sam *et al*., 2013). The ships operating at this port can be grouped based on size, type of fishing gear, and ship construction materials. One of the ships operating at the Nizam Zachman PPS port is a ship with a construction as a fish container ship. A container ship is a special type of ship designed to maintain the survival of fish during the transportation process from the fishing or cultivation location to the port or processing location. This ship is equipped with a tank filled with circulating seawater or uses a cooling system to maintain optimal environmental conditions for live fish (Widianto & Fauzi, 2020).

In its operation, the container ship not only functions as a means of transportation, but also as a supporting unit for capture fisheries and aquaculture activities, because it is able to move fish alive without causing excessive stress that can reduce the quality of the fish (Effendi & Setiawan, 2019). In addition, this ship can also be used as a liaison between fishing vessels and facilities on land, especially in areas that do not yet have complete ports. Thus, the presence of a container ship increases the efficiency of the fishery product distribution chain and supports the quality of the catch to be maintained until the marketing stage (Ghosh, 2022). According to Handoko and Yuniarti (2022), good fish handling techniques on board are very important to maintain the quality of the fish catch. They stated that the application of proper handling techniques can prevent rapid decline in fish quality and reduce financial losses due to decreased fish selling prices. Therefore, the purpose of this study is to analyze the fish handling process on a container ship and to determine the number and types of fish handled.

RESEARCH METHODS

This research was conducted from November 2020 to May 2021 on a container ship, namely KM. Fortuna VI for 2 trips anchored at PPN Nizam Zachman Jakarta Utama. The method used is a descriptive method by directly following fish handling activities on the container ship and calculating the number and types of fish handled.

RESULTS

Fish Handling On Board Ship

Handling activities on the container ship KM. Fortuna VI start at 07.00 until finished. Activities include several stages, namely deck and equipment preparation, handling, arrangement and freezing. KM. Fortuna VI is one of the container ships under PT. Suman Karya Persada. This ship accommodates fish from the catch of container ships in the middle of the sea or fishing ground area.

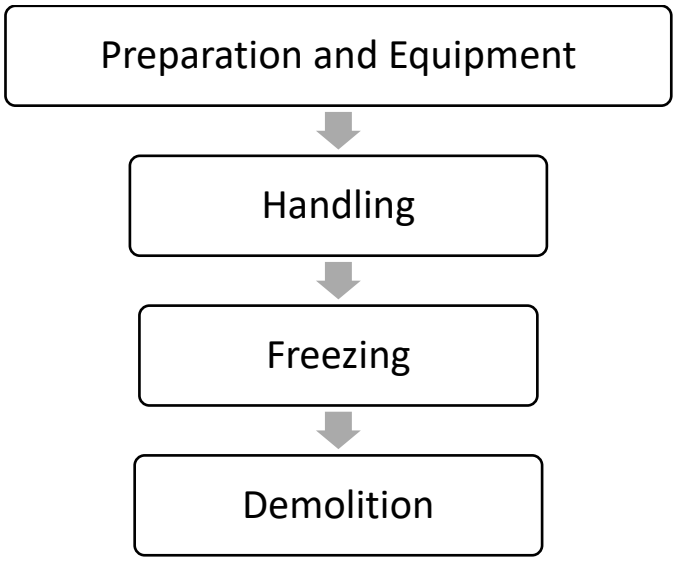

Figure 1. Flow diagram of the handling process on the container ship KM. Fortuna VI.

In one storage activity, KM. Fortuna VI accommodates fish from 6 (six) fishing vessels with a maximum storage capacity of 150 tons on KM. Fortuna VI. All stages in handling, distributing, and storing fish on fishing vessels need to be designed and built using standard materials, in order to prevent contamination of the fish caught. The design must also support ease, speed, and efficiency in the fish handling process, while facilitating the washing and cleaning of equipment.

Deck and Equipment Preparation

Deck and equipment preparation is an initial activity before carrying out handling or activities on a container ship. This preparation activity begins with the preparation of the crew who must comply with the standard operating procedures for sanitation on board. Personal equipment for crew that must be used during fish handling includes work clothes/wear packs, long-sleeved shirts and training pants, masks, rubber boots, gloves (rubber or cotton). After the crew's self-preparation process is complete, the next step is deck preparation. Deck preparation is very important for the safety of the ship's crew, considering that working on a ship or deck has a very high risk, so the initial stages that must be carried out are:

a. The deck surface is cleaned by spraying seawater using a pump, as an initial step to remove coarse dirt.
b. After spraying, the deck is brushed until clean. If there is dirt that is difficult to remove such as oil, then soap is used to help the cleaning process thoroughly.
c. All work equipment such as fish baskets, knives, machetes, crowbars, and other tools must be washed and arranged in a special place that is easy to reach when needed.
d. When working during the day, the work deck area should be covered with a tent or tarpaulin. The aim is to prevent excessive heat on the deck floor and protect the caught fish from direct sunlight which can accelerate the decline in freshness.
e. The installation of the tent must take into account so as not to interfere with other work activities on the ship or the course of the voyage.
f. At night, work lights need to be turned on to support operational activities. However, the lighting must be adjusted so as not to interfere with the function of the ship's navigation lights.

In addition to cleaning the floor, deck surface and work equipment, cleaning must also be done on the bottom floor of the hold. The hold walls must be kept clean from all types of

dirt, such as blood residue and fish mucus that is still attached. If there is ice residue from the previous storage process, the ice must be removed immediately so as not to interfere with cleanliness. In addition, the equipment and supplies used to handle, distribute, and store fish on board must be designed and made using high-quality materials. This aims to ensure that the equipment does not cause contamination to the fish caught, facilitate and speed up the handling process, increase work efficiency, and facilitate the cleaning and maintenance of the equipment. This is in accordance with the opinion of (Nelwan, 2004), that the treatment controls cleanliness during handling, both in tools, humans, and, the handling place so that the risk of bacterial contamination is reduced.

Fish Handling

The process of transferring fish from the fishing vessel to the container vessel is carried out manually with a total of 4 crew members. This transfer process is carried out quickly and carefully. At the beginning of the transfer, one of the crew members is tasked with checking the fish to be transferred in order to ensure the condition of the fish before being transferred to the container vessel. In addition, the process of transferring fish quickly also aims to minimize cross-contamination. Good fish conditions during the transfer process affect the quality of the fish when unloading on land. Fish transferred from the fishing vessel must be weighed first. Large fish are separated from small fish. The following are some of the things done on the KM. Fortuna VI ship during the process of transferring fish from the fishing vessel :

1. Checking the temperature of the fish before transferring them to the container ship
2. Recording the number and type of fish
3. Separating the fish according to size and species

Arrangement and Freezing in the Hold

Arrangement of fish in the hold is carried out according to the type and size of the fish. Large fish are separated and placed at the bottom, to avoid pressure. Arrangement of fish in the hold of KM. Fortuna VI uses the bulking method. In the process of arranging fish in the hold on the ship KM. Fortuna VI, the author carried out this activity on the ship, the arrangement was carried out in the middle of the sea by the operating ship that would send the fish docking with the collecting ship KM. Fortuna VI. In accordance with the opinion of Tani *et al*. (2020) that after packaging, the fish must be immediately stored in the hold and arranged. The arrangement of fish is carried out in stacks starting from the bottom of the hold until it is full. Arranged neatly so that cooling is even.

After the hold is full, the hatch is tightly closed so that the cold temperature produced by the Refrigerant machine does not escape the room so that the cooling process runs well and so that the ice does not crystallize. After the hold is full of the catch, the hatch must be tightly closed to keep the cold temperature produced by the refrigeration machine trapped in the room. This is very important so that the cooling process can take place optimally and prevent ice crystallization which can damage the quality of the fish. According to Susanto (2018), maintaining a stable temperature in the storage room is crucial to maintaining the freshness of fishery products during storage and transportation. A constant temperature also reduces the risk of excessive ice crystal formation which can damage the texture of the fish and accelerate physical and chemical damage to fish tissue. Therefore, good temperature management in the hold is the main factor in maintaining the quality of the fish catch during the distribution process (Rahman & Hidayat, 2020). While the hold temperature during storage is -20 oC. In accordance with the opinion of Tani *et al*. (2020) The hold temperature used for storing fish on board must be maintained at around -20 ° C.

Figure 2. Arrangement of Fish in the Hold

Number and Type of Fish

Adapun The types of fish present during the loading process are large pelagic fish and small pelagic fish. Each has a different amount of cargo. The following is a table of types of fish cargo during the 2 trips on the KM. Fortuna VI ship:

Table 1. Types of commodities found on the KM Fortuna VI ship

No	Types of Fish	Number of Fish (tons)
1	Flying Fish	25 tons
2	Skipjack Tuna	326 tons
3	Yellowfin Tuna	198 tons
Total Load		544 tons

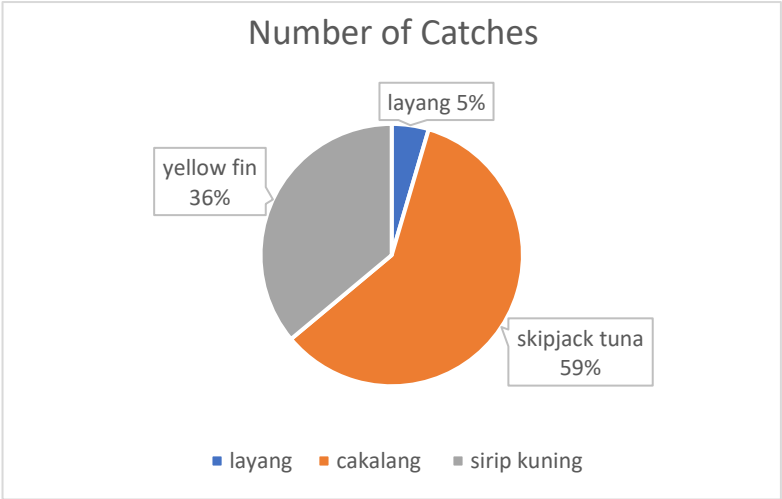

Figure 8. Pie chart of percentage of number of fish according to commodity

Preparation for Unloading Fish at the Port

In the process of unloading fish as the final stage of handling on board, there are several important things that must be prepared to handle the fish caught on the ship's deck or at the port. One of the main aspects is the readiness of the crew members (ABK) on duty. Several preparations that must be made by the ABK include:

a. Wearing standard work clothes, such as a wear pack or coat, especially if the weather is rainy.
b. Wearing a mask to maintain cleanliness and health during the fish handling process.
c. Wearing boots to protect your feet from wet and slippery conditions on the ship's deck.
d. Wearing gloves, either rubber or cotton, to protect your hands when handling fish and work equipment.

The purpose of physical preparation and work equipment for crew members (ABK) is to protect them from the risk of injury that may occur during the fish unloading process. This is important because unloading activities are physically heavy work, require great energy, and have high potential for danger, especially due to slippery deck conditions, repetitive workloads, and the use of sharp tools. According to Handayani *et al*. (2019) that loading and unloading fish is included in the category of high-risk work for musculoskeletal injuries and work fatigue if not balanced with adequate personal protection. Therefore, the use of personal protective equipment (PPE) such as gloves, boots, masks, and wearpacks is an important aspect in minimizing work accidents on board. This was also conveyed by (Nelwan, 2004) in a study that ABK awareness and knowledge to carry out fish handling methods must be good and correct by following sanitation and hygiene standards and for work safety.

Fish unloading activities are carried out at the Nizam Zachman Ocean Fisheries Port (PPS) in North Jakarta, this activity is carried out within 4 to 6 days starting from the process of unloading fish to cleaning the ship, and preparing supplies to take fish again at sea. This activity takes place at 08.00-17.00 WIB, sometimes continuing unloading at night or called overtime. The unloaded fish are then put into a pick-up truck that has been provided, and taken to the company's Cold Storage. In one day, the fish removed from the hold to the pickup truck are 70-150 tons or more. The fish taken to the company's Cold Storage are stored and will be processed or sold at any time if someone buys it.

Figure 3. Fish Unloading

According to Tani *et al*. (2020), the catch that has been stored in the hold will be distributed to land for sales purposes. This distribution can be done through two methods, namely by utilizing a container ship that functions as a means of transportation from the fishing location at sea to land, or through a direct unloading process at a port that has a Fish Auction Place (TPI) facility.

The container ships used for this distribution are specifically designed to transport fish from fishing vessels to TPI. There are 3 container ships used to distribute the fish catch. The ships in question are KM. Fortuna VI, KM. Fortuna VIII, and KM. Fortuna IX. The fish that

have been transported are then distributed to Nizam Zachman Port, before being forwarded to various fishing companies operating in the area. This distribution process is carried out via container ships 10 times, with an average load of around 50 tons per shipment. Overall, the amount of fish successfully distributed reached 500 tons. Container ships usually come every 30 days, not only to transport fish but also to bring various consumption needs and operational equipment needed by fishing vessels.

DISCUSSION

Based on this study, the handling of the catch carried out on the container ship is fish from the catch of the fishing vessel located in the middle of the fishing ground location. Handling is carried out immediately after the fish are moved. The principle of handling on a container ship is the same as the principle of handling fish in general, namely implementing a cold chain system, clean, careful and done quickly. This is done to avoid contamination and deterioration of fish quality (Tani *et al*., 2020). According to Sari and Nawafil (2023), handling fish on board using a freezer is one of the efforts to preserve fish by lowering the temperature. On KM. Fortuna VI, several other stages were also carried out, including preparing the deck or place that will be used as a place to handle fish during transfer. After preparing the deck, the process of handling and arranging the fish is carried out which aims to separate the size and type of fish during the process of arranging and storing them in the hold. Previous research conducted by Sari and Nawafil (2023) stated that handling fish on board at the sorting stage is one of the ways to separate the size of the fish and the quality of the fish. The next stage is the arrangement and freezing stage in the hold. This process is carried out to maintain the quality of the catch. According to Rossarie *et al*., (2020), the use of ice cubes in the handling process can slow down the biochemical processes that occur in the fish's body. Similar research also states that storing fish using cooling media such as ice cubes and storing them in the hold is an effort to maintain the quality of fish on board (Larasati *et al*., 2024). The arrangement of fish in the hold is arranged according to the type and size of fish, to avoid excessive accumulation of small fish. According to Irianto (2008), the quality of tuna fish is influenced by two factors, namely biological and non-biological factors. Handling procedures such as catching methods, handling techniques, cooling techniques, and storage techniques are non-biological factors. This study also recorded the number and types of fish caught and handled on the KM. Fortuna VI container ship. In this process, the author followed 2 trips where during this process KM.Forutna VI accommodated and handled three types of fish, namely scad (Decapterus spp) 25 tons, skipjack tuna (Katsuwonus pelamis) 326 tons and yellowfin tuna (Thunnus albacares) 198 tons. The number and type of fish on this container ship can change depending on the type of fishing gear used on the fishing vessel.

CONCLUSION

From the results of this study it can be concluded that the fish handling procedure on the fish storage vessel KM. Fortuna VI includes several stages, namely deck and equipment preparation, handling, arrangement and freezing, and unloading on land by implementing a cold chain system, maintaining cleanliness during the handling process, handling is carried out immediately or quickly and carefully. While the types of fish stored are flying fish (5%), skipjack tuna (59%), and yellow fin tuna (36%).

ACKNOWLEDGMENT

Thanks to PT. Suman Karya Persada and all staff of KM. Fortuna VI who have allowed the author to follow the process on board.

REFERENCES

Effendi, R., & Setiawan, I. (2019). Perancangan Refrigerated Sea Water (RSW) Sistem Kering pada Kapal Ikan Kayu Lapis Fiber 58 GT dengan Kapasitas Palka 45 m³. *SINTEK JURNAL: Jurnal Ilmiah Teknik Mesin*, 10(1), 45–56. https://jurnal.umj.ac.id

Ghosh, S. (2022). *Understanding Livestock Carriers - Design, Construction and Safety*. Splash247.

Handayani, N. D., Prabowo, S. H., & Sari, D. P. (2019). Analisis Risiko Kecelakaan Kerja pada Proses Bongkar Muat Ikan di Pelabuhan Perikanan. *Jurnal Keselamatan dan Kesehatan Kerja*, 8(1), 45–52.

Handoko, Y. P., & Yuniarti, T. (2022). Penanganan ikan hasil tangkapan di atas kapal dan di pendaratan: Penerapan, dampak, dan upaya perbaikannya. *Jurnal Kelautan dan Perikanan Terapan (JKPT)*, 8(2), 123–135. https://ejournal-balitbang.kkp.go.id/index.php/jkpt/article/view/12155

Irianto, H. E. (2008). Teknologi penanganan dan penyimpanan ikan tuna segar di atas kapal. *Squalen Bulletin of Marine and Fisheries Postharvest and Biotechnology*, 3(2), 41–47. https://doi.org/10.15578/squalen.v3i2.140

Larasati, R. F., Bay Bay, A. D. B., Hawati, H., Putra, A., Aini, S., & Rahmatang, R. (2024). Penanganan ikan hasil tangkapan pada KMN. Dua Putri 02 di Pelabuhan Perikanan Samudera (PPS) Kendari, Sulawesi Tenggara. *Jurnal Perikanan*, 14(1), 111–120. https://doi.org/10.29303/jp.v14i1.757

Munandar, A., Nurjanah, & Mola, N. (2009). Kemunduran mutu ikan nila pada penyimpanan suhu rendah dengan perlakuan cara kematian dan penyiangan. *Jurnal Teknologi Hasil Perikanan Indonesia*, *12*(2), 88–101.

Nurjanah, I., Setyaningsih, I., Soekarno, & Muldani, M. (2010). Kemunduran mutu ikan nila merah (*Oreochromis* sp.) selama penyimpanan pada suhu ruang. *Jurnal Pengolahan Hasil Perikanan Indonesia*, *7*(1). https://doi.org/10.17844/jphpi.v7i1.1056

Purbayanto, A. (2004). Jenis teknologi penangkapan ikan yang sesuai untuk dikembangkan di Pantai Timur Kabupaten Donggala Sulteng. *Buletin Jurusan Pemanfaatan Sumberdaya Perikanan*, Institut Pertanian Bogor. http://repository.ipb.ac.id/handle/123456789/40085.

Purnama Sari, I., & An Nawafil, M. I. (2023). Teknik penanganan ikan di atas kapal purse seine di Pelabuhan Perikanan Pantai (PPP) Bajomulyo, Jawa Tengah. *Albacore: Jurnal Penelitian Perikanan Laut*, **7**(3), 385–394. https://doi.org/10.29244/core.7.3.385-394Pusat Pengembangan dan Pemberdayaan Pendidikan dan Tenaga Kependidikan Pertanian. (2010). *Penanganan dan penyimpanan hasil tangkapan*. Departemen Kelautan dan Perikanan.

Rahman, F., & Hidayat, R. (2020). Pengaruh Pengelolaan Suhu pada Penyimpanan Ikan terhadap Mutu Produk Perikanan. *Jurnal Teknologi Perikanan*, 15(2), 123-130.

Ramdani, B. T., Choerudin, H., Muallim, R., Boesono, H., Prihantoko, K. E., Muninggar, R., Sayuti, M., Purnamasari, H. B., & Nurlaela, E. (2020). Penanganan ikan tuna (Thunnus sp.) pada kapal hand line yang didaratkan di Pelabuhan Perikanan Samudera Cilacap. *Prosiding Seminar Nasional Perikanan Indonesia*, 3, 1–7. https://ejournal-balitbang.kkp.go.id/index.php/psnp/article/view/13985

Rossarie, D., Darmanto, Y. S., & Swastawati, F. (2020). Sistem penanganan ikan cakalang (*Katsuwonus pelamis*) di kapal pole and line Kota Sorong, Papua Barat. *Jurnal Aquafish Saintek*, 1(1), 1–9. https://unimuda.e-journal.id/jurnalaquafishunimuda/article/view/868

Sam, A. R., Wisudo, S. H., Murdiyanto, B., & Iskandar, B. H. (2013). Strategi pengembangan Pelabuhan Perikanan Samudera Nizam Zachman Jakarta sebagai pusat pemasaran perikanan. *Marine Fisheries: Journal of Marine Fisheries Technology and Management*, 2(2), 129–139. https://doi.org/10.29244/jmf.2.2.129-139

Sudiyono, A. (2001). *Pemasaran*. Universitas Muhammadiyah Malang Press.

Susanto, A. (2018). *Teknologi Penyimpanan Ikan Segar dan Olahan*. Jakarta: Penerbit Perikanan Indonesia.

Sumardi, J. A. (2000). Ikan segar mutu dan cara pendinginan (review). *Teknologi Hasil Perikanan*, Universitas Brawijaya.

Sunarman, & Murniati, A. S. (2000). *Pendinginan dan pembekuan ikan*. Kanisius.

Tani, V., Rasdam, R., & Siahaan, I. C. M. (2020). Teknik penanganan ikan hasil tangkapan di atas kapal purse seine pada KM. Asia Jaya AR 03 Juwana Pati Jawa Tengah. *Jurnal Ilmu-Ilmu Perikanan dan Budidaya Perairan*, 15(1), 63–73. https://doi.org/10.31851/jipbp.v15i1.4512

Widianto, T. N., & Fauzi, A. (2020). Disain dan Kinerja Sistem Air Laut yang Direfrigerasi (ALREF) untuk Penampung Ikan pada Kapal Nelayan 10-15 GT. *Jurnal Pascapanen dan Bioteknologi Kelautan dan Perikanan*, 15(2), 101–112. https://www.bbp4b.litbang.kkp.go.id/jurnal-jpbkp

Winarno, F. G. (1984). *Kimia pangan dan gizi*. Gramedia Pustaka Utama.