

HUBUNGAN PENCEMARAN LINDI DAN KONSUMSI IKAN DENGAN KADAR KADMIUM DALAM DARAH PADA KONSUMEN DI DUKUH JAWAR KELURAHAN TAMBAKDONO KECAMATAN PAKAL SURABAYA

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FISH CADMIUM ; BLOOD CADMIUM

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ABSTRACT

Accommodating of garbage in Final disposal site (TPA) Benowo potentially produces lecheate that either seeps in soil or flows in soil's surface. Lecheate which derives from Accommodating of garbage has the impact to increase the fishpond water contamination level with one of contaminant is Cadmium around TPA. Fishes that live in that place will easily affect by Cadmium bioaccumulation, as the result, Cadmium will be consumed by human that cause the negative impact to human's health.

The objective from this research was studied the correlation between lecheate contamination and fish-from fishpond production-consumption with blood Cadmium level. Wanting to know how far fish consumption around TPA Benowo related to respondent's blood Cadmium level.

This research located in JawaTambakdono,Pakal Sub-district Surabaya. This research was cross sectional that the data analytic did with analytic method. The populations were women who consumed fish from fish pond around TPA Benowo. Total samples were 33 respondents for exposure group-who consumed fish from fishpond production-, whereas the comparator groups were 19 respondents.

From this research could be known that Cadmium level in outlet had exceeded the Cadmium's threshold limit value within Industrial waste water to be thrown away to irrigation canal was 0, 1 mg/l (Regulation of Surabaya Municipal Region no. 45 of 2002 about water quality controlling and waste water controlling). In Fishpond around TPA, the cadmium level within the water had exceeded the Cadmium's threshold limit value where the limit for Cadmium level was 0, 01 mg/l. It had known also that the distant factor became determine of Cadmium level within the water around TPA Benowo. At fish from fishpond production shown that the Cadmium level still below the Cadmium's threshold limit value. Nevertheless, more attention from this thing was needed because Cadmium was an accumulative metal. The averages of blood Cadmium level in exposure group were 3, 27 µg/ L, in the other hand, the averages of blood Cadmium comparator group were 0, 56 µg/ L. Using multiple linier regression had known that the correlation between food consumption and respondent's blood Cadmium level was very strong (shown in R value = 0, 820).It is concluded that there is correlation between fish consumption and blood cadmium level. It is suggested to reduce the cadmium toxicity, besides, the respondents have to increase the consumption of essential nutrient such vitamin c, iron, calcium, and zinc.

Key words: Lecheate Cadmium level, fish Cadmium level, water fishpond Cadmium level, blood cadmium level.

Summary

The Correlation between lecheate contamination and fish consumption with blood cadmium level at JawarTambakdonoPakal, Sub-district Surabaya

Growth of population may result in consuming and using resources by society, by means of consume level increasingly then the amount of rubbish will increase too. TPA Benowo is the only place for rubbish accommodating in Surabaya and its surrounding. The open dumping system which is executed in TPA Benowo will cause not only air contamination because of odor but also the rubbish that mounts up may result lindi. The existence of lecheate may contaminate ground water and resident's well, further, contaminating the fishpond around TPA Benowo. One of lecheate water compositions is cadmium. When people consume the fish that contain cadmium, then the cadmium may accumulation inside the body, in the end, will impact the health. As we know, this metal is the very hazardous metal for people's health (Darmono, 2001; Palar, 2008).

The objectives of this research was analyzed the correlation between fish consumption from fishpond around TPA benowo which suspicious contained cadmium with blood cadmium level. Researcher wanted to know how many variables that also influence blood cadmium level; one other thing was essential nutrient consumption.

This was an analytic research with cross sectional approach at women in JawarTambakdono who consumed fish from fishpond product around TPA Benowo. Sample was distinguished into two groups that were exposure group consist of women who consumed fish from fishpond and comparator group consist of women who did not consume fish from fishpond. The numbers of exposure groups were 33 respondents, whereas the comparator groups were 19 respondents. Data analytic used free sample paired T test and multiple linier regressions.

The result of this research showed that the average of lecheate cadmium level in outlet IPAL TPA Benowo was 1,24mg/l, which this result still above threshold limit value comply with ministerial decree, SK GubJatim No. 45 Tahun 2002. Cadmium level in fishpond water with near distance, medium distance and far distance in a row were 0,354 mg/l, 0,293 mg/l, and 0,002 mg/l. This result showed that the cadmium level within fishpond water among near, medium and far distance were different. It meant distance factor gave big enough contribution toward cadmium level within fishpond water, which further from TPA, the concentration more decrease. While, the fish from fishpond product showed the result for fish that was gotten from fishpond in near distance, the average of cadmium level was 0,138 mg/kg. For fish from medium distance, the average of cadmium level was 0, 07 mg/kg. For fish from far distance, the average of cadmium level was 0,083 mg/kg. This result showed that there was difference among the average of cadmium level at fish from fishpond with the distance. Factors such fish's condition, live cycle phase, fish's size, and fish's ability to adapt also contributed toward the cadmium level of its body. The average of cadmium level at exposure group was 3, 27 µg/L, whereas the average of cadmium level at comparator group was 0, 56 µg/L. p point was 0,000, gotten by using paired T test with free sample. It meant there was difference that means enough between exposure group and comparator group in case of blood cadmium level. Linier regression test used to find out the correlation between fish consumption level and blood cadmium level. The result showed R point was 0, 820 which meant the correlation between them was very strong.

Besides, multiple linier regressions used to find out how far fish consumption variable and essential nutrient consumption influenced blood cadmium level, the result showed that consumed milkfish and vitamin C everyday influenced the respondent's blood cadmium level. Model linier was $y = 1,592 - 0,018 (\text{vitamin C consumption}) + 0,018 (\text{milkfish consumption})$.

From the result of this research can be concluded that there is correlation between fish consumption from fishpond product and blood cadmium level. It is suggested to reduce the cadmium toxicity, besides, the respondents have to increase the consumption of essential nutrient such vitamin c, iron, calcium, and zinc.

