Nº. de Inscrição _____

Universidade Federal de Goiás

Instituto de Química

Coordenação de Pós-Graduação em Química

SELEÇÃO DO PROGRAMA DE PÓS-GRADUAÇÃO EM QUÍMICA – 2019/2

EXAME DE SUFICIÊNCIA EM LÍNGUA INGLESA

IDENTIFICAÇÃO DO CANDIDATO - Número de Inscrição: _Respostas Esperadas

INSTRUÇÕES IMPORTANTES:

- Identifique **TODAS** as folhas com seu número de inscrição;
- **Leia** o texto e responda cada questão somente no espaço indicado;
- Respostas a lápis não serão consideradas;
- **Permite-se** o uso de dicionário;
- A prova tem duração de 2 horas;
- Os candidatos poderão ausentar-se em definitivo da sala de aplicação da prova somente após decorridas 1 (uma) hora e 30 (trinta) minutos do início da prova, sob pena de eliminação;
- Os candidatos poderão ir ao banheiro somente após decorridas 1 (uma) hora e 15 (minutos) minutos do início da prova;
- Os 3 (três) últimos candidatos deverão permanecer na sala até que o último candidato termine a prova;
- O uso de celular ou outro equipamento de comunicação **não** é permitido.

Leia atentamente os textos a seguir:

NEWSWEEK, BY KASHMIRA GANDER ON 6/4/19

Is red or white meat healthier? Scientists compare beef, chicken and plants in cholesterol study

*W*hite meat could carry the same heart health risks as red meat according to scientists who studied how beef and chicken affect cholesterol levels.

The authors of a study published in the American Journal of Clinical Nutrition concluded plant-based proteins seem to be the best option for those looking to control their blood cholesterol levels.

Past studies indicate red meat, but not poultry, can raise the risk of heart disease, while proteins found in plants can protect the cardiovascular system. It is thought the high levels of saturated fats in red meat raise the levels of low-density lipoprotein (LDL), or "bad" cholesterol in the blood, and can in turn cause heart disease. LDL particles can clog up the arteries by delivering waxy cholesterol to their walls, which leads to a build-up of plaque linked to heart disease or stroke. It is also believed that the size of the LDL particles plays an important role in a person's chance of developing heart disease. Compared with their larger counterparts, smaller LDL particles are better at getting in the arteries to transport cholesterol.

With this in mind, the U.S team looked at how diets with different levels of saturated fats would affect levels of LDL cholesterol.

The researchers recruited 113 healthy men and women aged between 21 to 65 years-old for the study. First, they asked the participants to follow a two-week diet to check they could stick to a regime. They then randomly put them in a high saturated fat or low saturated fat diet group.

In their respective groups, the participants ate red meat, white poultry meat, and then no meat in separate four-week periods punctuated by washout periods where participants went back to their normal diet. Their activity levels—which they documented in weekly logs—were kept the same, and they were instructed to stop drinking alcohol and taking vitamins during the course of the study.

The participants picked up their food - including standardized entrees, side dishes, drinks, and snacks - at the lab, where researchers also weighed them, and counselled them on their diets. Blood samples were collected at the start and finish of each diet, including the initial program lasting two weeks. Beef was the main red meat source, followed by pork; chicken was the main white meat source, followed by turkey.

Ronald Krauss, professor of medicine at the University of California, San Francisco and senior author of the study, told Newsweek that the participants primarily ate corn-fed beef, as this is the type of red meat most commonly consumed in the U.S. Lean meats were used so the team could compare

the effects of adding low or high saturated fat. Processed meats weren't allowed in case the chemicals skewed the results. In the high-fat plant-based groups, the substance came from tropical oils and fats, and high-fat dairy products.

Krauss said this is the first study to systematically compare the effects of red, white, and plant-based sources of protein on cholesterol levels in diets where other major nutrients were kept constant and saturated fat intake was controlled.

Based on current dietary advice to favor white meat over red, Krauss said the team had expected poultry to result in lower cholesterol levels. Instead, the research showed levels of LDL cholesterol were the same both in those who ate red meat and white meat. However, LDL levels were lower when the participants had plant-based diets.

"These results were similar whether or not the diets were high or low in saturated fat. So the result can be viewed as indicating either a cholesterol raising effect of both meats, or a cholesterol lowering effect of plant foods, or both," said Krauss.

The way the study was designed meant the researchers were unable to test the effects of different sources of red meat, for instance processed versus unprocessed lamb and beef, said Krauss. And the team could have also explored the effects of fish, said Krauss as he detailed the study's limitations.

It seems that diets high in plant proteins are preferable over those with high amounts of either red meat or white poultry for controlling blood cholesterol levels, said Krauss.

"It [the study] reinforces the need to consider food sources of nutrients such as protein, rather than the nutrients themselves, when evaluating the health effects of diets."

The research also highlighted the importance of the size of LDL cholesterol rather than just their presence in the blood when considering the potential damage to heart health, argued Krauss.

Considerando apenas as informações contidas no texto, responda:

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01) (3,00 pontos)

a) (1,00 ponto) Como a lipoproteína de baixa densidade presente em nível elevado no sangue pode provocar uma doença cardíaca?

R: LDL particles can clog up the arteries by delivering waxy cholesterol to their walls, which leads to a build-up of plaque linked to heart disease or stroke.

It is also believed that the size of the LDL particles plays an important role in a person's chance of developing heart disease.

b) (2,00 pontos) Qual a ação adotada pela equipe dos EUA e como esta ação foi aplicada para analisar como as dietas com diferentes níveis de gorduras saturadas afetariam os níveis de colesterol LDL?

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02) (2,00 pontos) De acordo com o texto, o que os pesquisadores esperavam em termos de ingestão de ave? O que de fato foi constatado? E a partir do constatado, o que foi aconselhado para manter os níveis de LDL baixo?

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How Did Life Begin?

Is the existence of life on Earth a lucky fluke or an inevitable consequence of the laws of nature? Is it simple for life to emerge on a newly formed planet, or is it the virtually impossible product of a long series of unlikely events? Advances in fields as disparate as astronomy, planetary science and chemistry now hold promise that answers to such profound questions may be around the corner. If life turns out to have emerged multiple times in our galaxy, as scientists are hoping to discover, the path to it cannot be so hard. Moreover, if the route from chemistry to biology proves simple to traverse, the universe could be teeming with life.

The discovery of thousands of exoplanets has sparked a renaissance in origin-of-life studies. In a stunning surprise, almost all the newly discovered solar systems look very different from our own. Does that mean something about our own, very odd, system favors the emergence of life? Detecting signs of life on a planet orbiting a distant star is not going to be easy, but the technology for teasing out subtle “biosignatures” is developing so rapidly that with luck we may see distant life within one or two decades.

To understand how life might begin, we first have to figure out how — and with what ingredients — planets form. A new generation of radio telescopes, notably the Atacama Large Millimeter/submillimeter Array in Chile’s Atacama Desert, has provided beautiful images of protoplanetary disks and maps of their chemical composition. This information is inspiring better models of how planets assemble from the dust and gases of a disk. Within our own solar system, the Rosetta mission has visited a comet, and OSIRIS-Rex will visit, and even try to return samples from, an asteroid, which might give us the essential inventory of the materials that came together in our planet.

Considerando apenas as informações contidas no texto, responda:

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03) (1,00 ponto) Se o surgimento da vida em um novo planeta não for fácil, qual a outra hipótese para este fenômeno?

R: O resultado quase impossível de uma extensa série de eventos improváveis.

04) (1,00 ponto) O que os cientistas esperam descobrir?

R: Se a vida acabou emergindo múltiplas vezes em nossa galáxia.

05) (1,00 ponto) O que seria necessário para o universo estar repleto de vida?
R: A fácil transposição do caminho que leva os eventos químicos aos biológicos.

06) (1,00 ponto) Quanto tempo ainda teremos que esperar para encontrarmos vida além da Terra e a que devemos este tempo de espera?
R: Uma ou duas décadas, graças ao desenvolvimento muito rápido da tecnologia de exploração de bioassinaturas discretas.

07) (1,00 ponto) O que as imagens capturadas por telescópios de última geração têm inspirado?
R: Modelos aperfeiçoados de os como os planetas se formam a partir da poeira e gases de um disco.