**PHARMACOLOGY PBL (PROBLEM BASED) REPORT**

**Response of Muscarinic receptor binding assay**

Each of the plant extracts elicited dose-dependent contractions of the muscarinic receptors. The threshold of the responses of either of the leaf extracts was observed at a concentration of 1.00E-09 and the maximum contractile response at 1.00E-06. The semi-log concentration curves can be derived from the tabulated results.  From the results, it is observed that the concentration shifted to the right upon the introduction of 2.00E-7 mepyramine. Different concentrations are found when the extract is pure and when with other chemical substances (Trivedi 2009, p. 188). The concentration percentage of Ach is increased as the concentration of extract Y is raised from 1e10-8 to 1e10-6 as can be observed from the results.

**Potency of the extracts**

The potency of the extracts was found to reduce when either mepyramine or atropine is introduced into the muscarinic receptor. A significant increase in the mean of A. caudatus alone in comparison to the when 2.00E-7 of atropine is included. It was also observed that there was an increase in the mean of S. melongena before the pre-treatment with mepyramine. The mean decreased when mepyramine was introduced in the receptors by pre-treating the receptors with it.

A graphical illustration of the concentration variations of the extract at various responses concentration of Ach when mixed with extract Y. as the concentration of the extract increased, the percentage response as well increased though not in the proportion (Iwu 2005, p. 187). A comparison can be made using some other extracts to find out how they would behave as the concentration is altered.

**Affinity of the extracts in the absences and presence of antagonists**

There was a no significant decrease in the affinity of each of the extracts for the muscarinic receptors in the presence of antagonists. For the case of Amaranthus caudatus, there was a reduction in the affinity by a difference of less than 0.0014 in the presence of atropine and yet a reduction of not more than 0.00338 when the muscarinic receptors were pre-treated with mepyramine (Phytotherapy 2009, p. 369).

**Discussion**

From the tabulated results of this experiment, it is evident that both the extracts of Solanum melongena and Amaranthus caudatus have effects on the activity/ contraction of the muscarinic receptor binding assay. An introduction of antagonists on to the receptors by pre-treatment led to a shift to the right of the concentration curves for each of the individual plant extracts. It can as well be deduced from the results that the potency of the plant extracts recorded a notable reduction with the introduction of the antagonists (Organization 2007, p. 454).

On the same note, there was an increase in the concentration which was responsible for the production of maximum response in the presence of the antagonist. Atropine competitively blocked the contraction caused by Amaranthus caudatus illustrating there was a predominant interaction between the extract with the muscarinic receptors. This was, however, contrary to the case of Solanum melongena regarding contraction. The contraction produced by Solanum melongena are more sensitive compared to the antagonism produced (Wyk 2008, p. 451). Summed up together is conclusive that the experiment is an illustration that Solanum melongena is responsible for the predominant stimulation of receptors which are responsible for contraction in the in the muscarinic receptor binding assay.

The same stimulatory effects of Solanum melongena as observed in the muscarinic receptors have been exhibited in histaminergic receptors found in the respiratory tract. It has been proved that the products of A. caudatus including the leaves and the grains reduce blood pressure (Hutchings 2004, p. 267).  Other findings include that the continued consumption of extracts from the two plants increase the contraction generate by muscle receptors’ stimulations of the intestinal muscles.  These findings serve as a basis of arguments for a good purpose in dietary control especially for such conditions as obesity, diabetes and complicated related to the heart. In which there is need to fill the stomach without necessarily increased absorption of nutrients.

Reports as well indicate that histaminergic and cholinergic stimulation leads to vasodilation even though the cardiovascular system is not included in this study. The stimulation of the receptors by extracts from these plants is synergetic to actions that are hypercholesterolaemic of either of the plants. For this reason is the belief for the hypersensitivity of these plants (Hatfield 2004, p. 124).

Other experiments that I would like to complete in order to under into finer details these compounds would be to use the plant extracts for muscles in the cardiovascular system. This would help in understanding whether these vegetables as well bring about vasodilation in the cardiovascular system as they do in the respiratory tract and in the digestive tract. Another experiment would be to swap the antagonists so that the used on A. caudatus is used on Solanum melongena and vice versa. This would help in establishing the effects of the antagonists and allow comparison to be made on the results found. The similarities and the differences can be used to draw conclusions appropriately. Antagonists may behave differently in different extracts due to the variations in chemical compositions of those extracts.

**Conclusion**

From the findings from the experiment, it can conclude that potency of the extracts are higher in the absence of antagonists and are reduced upon treatment of the receptors with antagonists. This applies both to the Solanum melongena and Amaranthus caudatus extracts regardless of the antagonist used. On the other hand, there is not a notable change in the affinity of each of the extracts when the receptor is pre-treated with antagonists.

This could be an implication that antagonists have no effect on the affinity of the extracts hence not able to alter their chemical composition with this regard. The maximum mean increased in Amaranthus caudatus but relatively decreased in of Solanum melongena. The increase in the case of Amaranthus caudatus could be translated to mean a stimulation to generate contraction from the muscarinic receptors while the reduction for the case of Solanum melongena implied stimulation of histaminergic H1 receptors. These conclusions form the basis of steps to take as far as maintaining healthy living is concerned. From this information, one gets information on his dietary guidance especially individuals undergoing medication for various diseases.

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