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ProductInformation

Histone
from calf thymus

Product Number **H 4524**
Storage Temperature 2-8 °C

Product Description

CAS Number: 37244-51-2

Histones are a group of basic proteins which form reversible complexes with DNA. Histones are characterized by relatively high levels of lysine and arginine.[1] The molecular weight of histones are approximately 11 to 21 kDa depending on the fraction.[2] Five different fractions have been isolated and characterized.[2,3,4,5]

Special precautions should be taken when running electrophoresis gels of basic proteins such as histones. Normal SDS-PAGE conditions give anomalous results. An acid-urea-detergent system should be used and the polarity of the poles reversed.[6] A method for the purification of the five main histone fractions from calf thymus by gel exclusion chromatography[7] has been published as well as other methods.[8]

	Molecular Weight	Bradbury[4]	Johns[2]
Lysine Rich	21.5 kDa	H1	f_1
Slightly Lysine Rich	14.0 kDa	H2a	f_{2a}
Slightly Lysine Rich	13.8 kDa	H2b	f_{2b}
Arginine Rich	15.3 kDa	H3	f_3
Arginine Rich	11.3 kDa	H4	f_{2a1}

Product No. H 4524 is the same histone fraction as Product No. H5505. It has been additionally tested for suitability as a substrate for protein kinase C. It may be also be suitable in other protein kinase systems.[12]

The lysine rich fraction (H1) is thought to act as a link between "beads" (nu bodies) on the chromatin chain.[1] A review of histones[9] and their characterization and amino acid sequences[10] have been published.
Histone preparations offered by Sigma include:
Product No. H 6005 is a heterogenous mixture of all the histone fractions prepared slightly differently from Product No. H 7755.
Product No. H 7755 is a heterogenous mixture of all the histone fractions prepared slightly differenty from Product No. H 6005.
Product No. H 9250 is unfractionated whole histone.
Product No. H 5505 is an isolated[11] lysine rich fraction of mainly subfraction f_1 in character.
Product No. H 4524 is an isolated[11] lysine rich fraction of mainly subfraction f_1 in character. It is tested and found suitable as a substrate for protein kinase C.
Product No. H 4255 is a slightly lysine rich fraction with the predominant form similar to subfraction f_{2b}.
Product No. H 4380 is an arginine rich fraction with the predominant form similar to subfraction f_3.

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

Histones are soluble in water (10 mg/ml) or 0.5 N HCl (10 mg/ml), yielding a clear to hazy solution depending on the fraction. They are soluble in 6 M urea (4-10 mg/ml), but this will denature the histones.

Histones dissolved or suspended in water should be stable for at least 6 months when frozen in single use aliquots.

References

1. Concise Encyclopedia of Biochemistry, 2nd ed., p. 265 (1988).
2. Elgin, S., and Weintraub, H., Chromosomal Proteins and Chromatin Structure, in Ann. Rev. Biochem, Vol. **XLIV**, (Snell, E., Boyer, P., Meister, A., and Richardson, C., eds.), Annual Reviews, Palo Alto, 725 (1975).
3. Johns, E., and Butler, J., Further Fractionations of Histones from Calf Thymus, Biochem. J.,**82**, 15 (1962).
4. Johns, E. W., Studies on histones. 7. Preparative methods for histone fractions from calf thymus. Biochem. J., **92(1)**, 55-59 (1964).
5. Bradbury, E. M. Histone Nomenclature in The Structure and Function of Chromatin, (Fitzsimmins, D. W., and Wolstenholme, G. E. W., eds.) pg. 4, CIBA Foundation Symposium 28, American Elsevier, New York (1975).
6. Andrews, A. T., Electrophoresis Theory, Techniques, and Biochemical and Clinical Applications, 2nd ed., Oxford Science Publications, pp. 141-143.
7. Bohm, E.L., et al., Purification of the five main calf thymus histone fractions by gel exclusion chromatography. FEBS Letters, **34(2)**, 217-221 (1973).
8. Oliver, D., et al., A modified procedure for fractionating histones. Biochem. J., **129(2)**, 349-353 (1972).
9. von Halt, C. Histones in perspective. BioEssays, **3(3)**, 120-124 (1985).
10. Handbook of Biochem. and Mol. Biol., 3rd ed., Proteins, Vol. II, p. 294 (1986).
11. Biochim. Biophys. Acta, **62**, 608 (1962).
12. Cicirelli, M. F., et al., J. Biol. Chem., **263**, 2009 (1988).

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